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A.M.A. Session · NEW YORK · June 10-14, 1940

Symposium on Diseases of Colon

The October Number of the *Surgical Clinics of North America* is from the Cleveland Clinic. It contains a *12-clinic Symposium on Diseases of the Colon* in which specific details of today's methods of diagnosis and treatment are set down by leading authorities—authorities who are daily practicing the very methods they here describe for you.

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See Complete Contents in SAUNDERS ADVERTISEMENT—Page 3

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THE MANAGEMENT OF EXOPHTHALMIC GOITER IN A GENERAL HOSPITAL

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AND
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NEW YORK

It is a well known fact that the surgical treatment of exophthalmic goiter in centers highly specialized in thyroid surgery may be carried out with a practically negligible mortality. In spite of many serious complications of this disease (hypertension, arteriosclerosis, diabetes and auricular fibrillation) the mortality is much lower than in chronic appendicitis or inguinal hernia when the latter diseases are associated with cardiac or other complications. This low mortality, however, is usually not maintained in general hospitals, where mortality figures are often from five to ten times higher than in special thyroid clinics. These clinics with a few thousand goiter operations a year have naturally developed an almost perfect organization both medically and surgically. It has been claimed that a similar organization cannot be maintained in a general hospital. Undoubtedly this statement is correct unless an organization within a general hospital is created for the proper management of this group of cases. That an efficient organization for the handling of thyroid cases can be created in any general hospital without great difficulty is proved by this report.

Most general hospitals have a number of surgical and a number of medical services. If the cases of thyroid disease are distributed or rotated among these different services, it is impossible to establish the organization necessary for the proper management of these cases. In other words, grouping the cases is the first step in an attempt to reduce the mortality and improve the results. Naturally, grouping requires continuous services. Rotating the services (two or three groups of men being in charge of the service during a calendar year) is incompatible with the development of a high standard of efficiency.

The present organization at this hospital was established in 1931. It was decided to concentrate the diseases of the thyroid gland in one medical (Oppenheimer) and one surgical (Lewisohn) service. Patients sent in by members of the other medical service (Baehr) were admitted to the Baehr service and were operated on by the same surgical unit. They are included in this survey. However, patients sent to the wards of the hospital by members of the other three surgical groups were operated on in their respective services. They comprise a very small number and are not included in this statistical review.

From the Mount Sinai Hospital.

ORGANIZATION AND MANAGEMENT

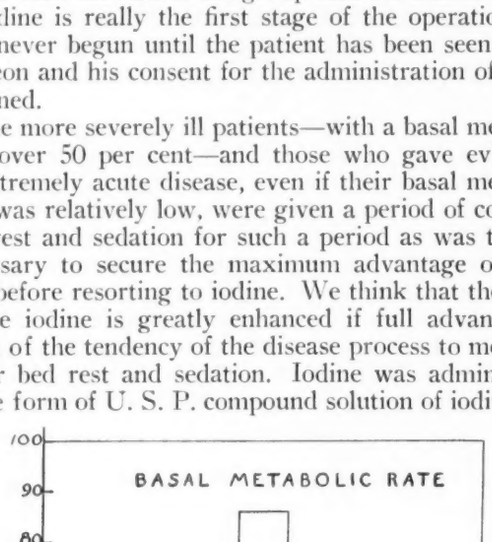
The patients were usually admitted to the medical wards of only one medical service, where they were seen by the medical members of the group. Whenever possible the patients were placed in a small back room containing only two or four beds and were not placed in the large general ward. They were encouraged to believe that a special interest was being taken in them by the group, and frequent opportunities were offered them for a detailed discussion of their real or fancied complaints. Any one who has handled these patients knows how important it is to be a "good listener." Since many of the patients were very apprehensive, as little as possible was done in the way of study until they had become accustomed to the hospital atmosphere. Psychotherapy of the most simple and practical sort was carried out, and the patients came to feel that they had a friend in the medical adviser. If patients were obviously in fear of surgery we usually answered their early questions regarding the necessity of surgical treatment by saying that the type of treatment would depend on the results of the "tests." As confidence developed, most of the patients were told of the advantage of surgery and they readily signed consent for operation. In some cases it was considered unwise to deal directly with the patient, and consent for the operation was obtained from a responsible relative and the operation done without the patient's knowledge, avertin with amylene hydrate being used as a basic anesthetic after the patient had been prepared by daily enemas of an inert substance for some time before the scheduled operation.

The patients were put to bed and kept there for at least several days. After that, lavatory privileges were allowed the less sick. All were given unlimited diets and encouraged to take extra nourishment between meals. No special effort was made to restrict protein or favor fat in the diet, and supplementary vitamins were rarely given. Relaxation packs were used only infrequently, but they sometimes seemed to help excited patients. The usual sedative was phenobarbital in doses of from 0.03 to 0.06 Gm. three times a day. If cutaneous rashes developed we usually substituted chloral hydrate and bromide for the barbiturate.

The occasional patient who remained very agitated, and particularly if diarrhea developed, was often helped by opiates, usually in the form of powdered opium in doses of 0.06 Gm. three or four times a day. We have no fear of opium medication in these patients for short periods, and it seems to exert a particularly beneficial effect in some instances.

A determination of the basal metabolic rate was done on admission and again one or two days later. If the rate was not excessively high, plus 50 per cent or less, the patients were usually given compound solution of iodine directly after preliminary studies had been made. It has been the rule of the group that the administration of iodine is really the first stage of the operation, and it is never begun until the patient has been seen by the surgeon and his consent for the administration of iodine obtained.

The more severely ill patients—with a basal metabolic rate over 50 per cent—and those who gave evidences of extremely acute disease, even if their basal metabolic rate was relatively low, were given a period of complete bed rest and sedation for such a period as was thought necessary to secure the maximum advantage of these aids before resorting to iodine. We think that the effect of the iodine is greatly enhanced if full advantage is taken of the tendency of the disease process to moderate under bed rest and sedation. Iodine was administered in the form of U. S. P. compound solution of iodine, and



Basal metabolic rates on admission to the hospital.

two-thirds cc. was given each morning. There was no fixed period between the onset of iodine medication and the day of operation. We have operated as early as the fifth day and as late as six weeks after the beginning of iodine medication. The average period of preoperative iodine medication was eleven days. The patients were observed carefully during this period to avoid any complications that might delay surgery, particularly exposure to infections of the upper respiratory tract, to which their susceptibility is extreme and well known. A rapid and good effect from iodine was always considered a good prognostic sign, and failure to respond by a drop in the basal metabolic rate, subsidence of clinical activity or a gain in weight was always viewed with suspicion.

We shall consider at another point the management of this group who fail to respond favorably to iodine.

During the period of iodine medication the basal metabolic rate was determined every third or fourth day and the operation performed as soon as the basal metabolic rate fell to plus 30 per cent or less. We wish to emphasize that although we consider the basal metabolic rate the best single indicator of the severity and progress of exophthalmic goiter, we are convinced that it is only one factor and that the disease is a great deal more than an elevated metabolic rate. We have seen patients who presented the picture of severe illness, and yet the basal rate was only moderately elevated. On the other hand, we have seen patients whose basal metabolic rate was plus 70 per cent or even plus 80 per cent and who did not impress us as being very ill. We have always regarded seriously those patients who fail to gain weight or whose basal metabolic rate remains high under rest and compound solution of iodine or in whom extremely agitated states, psychotic features, vomiting or diarrhea develops.

If an infection of the upper respiratory tract develops during the course of iodine medication, the operation is delayed until at least three days after all signs of the infection have cleared. The iodine is of course continued.

In the more severe cases one of the medical men usually arranged to be present at the operation to be able to consult with the surgeon as to the extent of the operation, and particularly whether the operation should be done in one or two stages. In most cases this decision was reached before the patient left the medical service. With regard to operation in two stages, our attitude has been that it affords a definite reduction in mortality and morbidity, and all patients about whom a serious doubt is entertained should be operated on in two stages. If there is a question as to the ability of the patient to stand a single stage operation, it is always better, we believe, to subject the patient to the inconvenience of two operations rather than to commit an irremediable error by subjecting the patient to more surgery than he can stand in a single stage. We have never seen any serious difficulty in the second stage, even in patients who were very acutely ill and who had had a stormy first stage.

In practically every case avertin with amylene hydrate was given by rectum as a basic anesthetic before the patient was taken to the operating room. We have had a large experience with avertin with amylene hydrate and recommend it highly for thyroid surgery. It spares the patient the tension and emotional excitement caused by the transfer to the operating room. In order to counteract any possible apprehension, the patient is given a hypodermic injection of a sterile salt solution and an inert enema on the two days preceding operation. Thus the patient reaches the operating room without the slightest emotional upset. The optimal day for the operation varies with the individual patient.

When the patient arrives in the operating room the pulse is counted. In a few cases when the pulse was over 150 beats a minute while the patient was under this anesthesia we have postponed the operation and have sent the patient back to the ward. We have never regretted this conservative attitude. However, decision as to the postponement should not be arrived at without bearing in mind that in many instances an accelerated pulse rate during basic anesthesia will drop 40 beats a minute when the patient is under complete anesthesia. The general anesthetic consisted of gas and oxygen and some ether. In a few instances in which there was a very severe heart lesion we have used ethylene gas or local anesthesia only.

An ever recurring acute problem in the management of this disease is what to do with the patient who has received iodine for a considerable period of time and yet fails to improve or even becomes worse under continued iodine administration. This is a very real and serious problem regarding which, unfortunately, there is no unanimity of opinion. This question also involves the problem of "iodine fastness" or "iodine resistance."

At the outset let us state our position clearly. In general the continuous, or even intermittent, administration of iodine to all patients with exophthalmic goiter over long periods of time is unwise and may even be dangerous. We feel that there is a clear difference in the reaction to iodine of a sufferer from exophthalmic goiter who has never received the element, if compared to one who has been under its effects for some time. One can almost predict a direct, immediate and significant amelioration of the course of the disease if the patient has never been given iodine. This is true whether the illness is of long or short duration, of moderate or severe intensity. Almost all these patients can be quickly improved to a point at which operation is safe. How different is the situation when one is faced by a patient who has had iodine for weeks or months. Experience has taught us how little more we can usually expect from the further administration of iodine. A failure to respond to the standard regimen plus iodine always leads one to suspect previous recent iodinization, and this suspicion is often confirmed. We do not pretend to explain this phenomenon, although theories have been advanced (Marine), but the clinical fact is obvious that good responses are the rule in patients who have not had iodine, and are less frequent in iodinized subjects.

We are aware that there are competent observers who have long disagreed with this point of view. These men believe that iodine always consistently lowers the basal metabolic rate and the tempo of the disease and that those cases in which it apparently fails to do so are merely examples of spontaneous alteration in the severity of the disease which would be even more marked if iodine were not administered. As a result of this concept they favor the administration of iodine and still more iodine to patients failing to improve under its use, hoping that the disease will ultimately spontaneously regress and that this regression will be accelerated by the iodine. If this point of view is correct, there should be no essential difference in the reaction of iodinized and uniodinized patients. In fact, we should expect, according to this concept, failure to respond in a considerable number of cases in which the natural tendency of the disease was toward greater severity. This should be true particularly in hospitalized patients, for it is hardly likely that ward patients would regularly seek hospital care while their condition was improving. Yet a study of these cases reveals scarcely a single example of failure to respond favorably to iodine by untreated patients, and frequent failure to respond by iodinized patients. It seems very strange that the "spontaneous" course of the disease was almost always favorable in patients who had received no iodine and unfavorable in iodinized patients. It is our opinion that these alterations were not spontaneous but induced by the iodine and that the iodine was unable to induce the favorable change if it had already been given for a period of time.

It has been our practice to continue the use of iodine for a period of about ten to fourteen days in patients who have received it before admission. If their condition improves sufficiently to warrant operation, this is performed. If this period brings no improvement or if deterioration sets in, we discontinue all iodine for at least six weeks. This sometimes leads to a considerable aggravation of symptoms in the first or second week, and we give heavy sedative medication at that time. After a six weeks period we again use iodine as in our routine and we usually see a direct and favorable response and can proceed with surgery.

SURGICAL CONSIDERATIONS

This paper deals with the general management of exophthalmic goiter. For this reason we shall not discuss in detail the finer points of this surgical technic.

In 80 per cent of the cases the operation was finished in one stage; in 20 per cent a two stage operation was performed. In about a dozen cases the originally proposed second stage was not done, as the condition of the patient was very good when seen in the follow-up clinic. In very severe toxic cases the two stage method was definitely planned before the patient came to the operating room. In other cases we were guided in our decision as to the one stage or two stage procedure by the report of the anesthetist or the general behavior of the patient or by encountering exceptional technical difficulties (for instance, excessive bleeding) during the operation.

When in doubt we have employed the two stage procedure. It is impossible to fix definite rules with regard to the question which cases should be selected for the one stage and which for the two stage operation. While some very severe cases of exophthalmic goiter are definitely labeled suitable only for a two stage operation, others are on the borderline. It is perfectly reasonable to assume that we might have achieved just as good results if we had confined the two stage procedure to about 10 per cent of the cases instead to 20 per cent. However, it is very often impossible to predict which cases may present a postoperative crisis. Thus to be on the safe side and to prevent if possible this alarming and usually fatal complication, we have selected the two stage operation when in great doubt.

There are several different methods for thyroidectomy. Some surgeons split both ribbon muscles; others get a good view of the operative field by simple retraction of these muscles. In this series the right ribbon muscles were usually divided. After the right lobe had been resected following the ligation of the right polar vessels and division of the isthmus, it was easy to dislodge the left lobe from its bed and proceed to the resection of the left lobe without division of the left ribbon muscles. Minute and careful hemostasis is of the utmost importance. We have usually drained the operative field and were thus able to minimize the postoperative collection of serum in the wound.

The patient is moved from the operating room to the surgical wards; not into the large ward, however, but into an adjacent small room for one or two patients. Except in very mild cases special nurses (day and night) supervise the postoperative treatment during the first one to three days. Immediately after the operation and during the next few days the patient is visited at frequent intervals by the medical and surgical staffs. Staff visits should not, however, be paid indiscriminately in order to avoid interference with the patient's rest. The room is kept dark and quiet. No visitors are allowed during the first few days. The patient is given plenty of fluid. A tracheotomy set and a suction apparatus are at the bedside. The suction apparatus is used to prevent the collection of mucus in the pharynx. Catheterization is done every ten hours unless the patient voids spontaneously. Methenamine and acid sodium phosphate are given if catheterization is necessary. The patient receives 6 minims (0.4 cc.) of Magendie's solution every six hours. The nurse is instructed to watch for and report to the house surgeon any bleeding, cyanosis, dyspnea or swelling of the face or neck. The total intake of fluid and output of urine

are charted. A steam inhalation apparatus is kept at the bedside; two-thirds cc. of compound solution of iodine is given as soon as the patient reacts. If a patient has not reacted after five hours, the compound solution of iodine is given by rectum. The patient receives an additional 2 cc. of compound solution of iodine in 1 ounce of water by mouth during the first twelve hours. If this is vomited, another dose is introduced by rectum. After the second day the compound solution of iodine is reduced to two-thirds cc. a day. The temperature is taken immediately after arrival from the operating room and every four hours thereafter. A rise of temperature above 102 F. and a rise of pulse rate above 130 beats a minute must be reported immediately by the nurse.

If any alarming symptoms occur, both medical and surgical attendants are immediately notified by the house surgeon and respond for a consultation. We feel that this close cooperation between the two staffs has been of great help to the patient and has improved our results considerably.

Naturally, the operations were performed by a number of surgeons. In fact, we are presenting the combined results of thirteen different surgeons. The majority of the patients (247) were operated on by the attending surgeon or by one of his two associate surgeons; the rest (113 patients) were operated on by ten adjunct surgeons. In this hospital we have the group system in the surgical service. The junior surgeons rotate among these groups, staying one year in each group. Naturally their experience in this special thyroid group is limited. For this reason one of the senior members of the staff assisted them at the operation. No patients with exophthalmic goiter were turned over to the house surgeons for operation.

No polar ligations were performed in this series. Undoubtedly polar ligation in the group of very sick patients is not without risk. It seemed to us that polar ligation is of no benefit because of the abundant blood supply which still reaches the thyroid gland after one or even both upper thyroid poles have been ligated. If thyroidectomy is performed in two stages, the patients are informed before they leave the hospital for a two or three weeks stay in the country that they are to return for a second operation. They stay on compound solution of iodine during the interval between the two stages. They are readmitted to the hospital directly from the convalescent home. It is inadvisable to have them return to their homes before they reenter the hospital. In the vast majority of cases such a stay at home would mean emotional shock and hard work (cooking, looking after the children and the like). We have had very little difficulty in enforcing the two stage operation. Only a few patients absolutely refused the second stage. None of this small group presented a satisfactory result when reexamined in our follow-up clinic, demonstrating the importance of a complete operation in order to effect a cure.

NONSURGICAL CASES

During the period of this study we observed forty-seven patients with definite exophthalmic goiter who, for one reason or another, did not come to operation. Of these patients, nine died while in the medical service, and a brief analysis of these deaths will be given. We offered operation to eighteen others who refused and left the hospital at their own request. There were eight patients who presented such a mild form of the disease that we did not consider surgery to be indicated. All these made complete recoveries under medical treatment. Three patients became psychotic with suicidal tendencies while in the hospital and had to be transferred to a psychiatric institution. The remaining nine cases, after study by the medical group, were considered unsuitable for surgery and were treated medically. In one case there was a difference of opinion between the medical consultants—one favored surgery and the other opposed it. In this instance the surgeon refused to operate. We refused to operate on another patient aged 69 whom we considered too poor a risk. She was given compound solution of iodine and roentgen therapy and was quite well, with a basal metabolic rate of minus 16 per cent, four years later.

Of the nine deaths among patients who were still in the medical service, six occurred within three weeks of admission. All these patients were desperately ill on admission to the hospital, and most of them were of the older age group who had serious cardiovascular complications. One patient died of an acute coronary artery thrombosis complicating diabetic ketosis. The remaining two patients died in typical thyroid storms following respiratory infections.

POSTOPERATIVE COURSE

Naturally in a series of more than 500 operations some postoperative accidents are apt to occur. A very small number of postoperative hemorrhages were seen. When such hemorrhage occurred, the patients were immediately taken back to the operating room where we had an opportunity to inspect the operative field carefully and stop the hemorrhage.

We did not observe any case of tetany of more than the lightest grade or of more than passing duration. As the symptoms never lasted more than from thirty-six to forty-six hours, we assumed that they were caused by a temporary injury to the parathyroids due to application of the clamp during the removal of the thyroid gland rather than to ablation of a part of one or more parathyroids.

MORTALITY

There were three deaths among 460 patients operated on for the first time for their thyroid disease. One of these deaths cannot be considered as an operative mortality. The patient had a subtotal thyroidectomy performed in two stages. The second stage was done after an interval of four weeks, during which the patient was kept in this hospital. She had reacted well after the second stage of the operation and had a comfortable night. The following day, while a special nurse left the room for a few minutes, the patient jumped out of the window and was killed immediately. The patient's husband told us later that she had played with the thought of suicide for many months. He had never taken her seriously and so had never mentioned the subject to us.

There was no mortality among the nontoxic group, in spite of the fact that some of these cases presented serious technical problems (large intrathoracic goiters and retrotracheal and retro-esophageal goiters). For instance, in one case of retrotracheal goiter the trachea was divided on its posterior aspect. The wide opening was immediately sutured and the patient made an uneventful recovery.

If we consider the operative deaths in the previously unoperated exophthalmic goiter group, we had a mortality of 0.5 per cent, if the case of suicide is not included.

There were two deaths among the twenty-six patients operated on for recurrent exophthalmic goiter. Both patients had had exophthalmic goiter for many years

and were extremely poor operative risks. In one case the operation (hemithyroidectomy) was performed under local anesthesia, as general anesthesia was definitely contraindicated because of the precarious general condition of the patient. In the other case a primary operation had been performed about twenty years previously at another hospital. In this case the heart was of the bovine type and the roentgenograms demonstrated the extreme risk of any operation in view of the serious cardiac changes. Yet the medical service felt that an attempt at relief by surgery should be made.

Among these twenty-six secondary cases operation had been performed in other hospitals in thirteen. Ten patients had had their first operation in this hospital many years before, and three had both their primary operation and their operation for recurrence during the period of this study.

FOLLOW-UP OBSERVATIONS

The close cooperation between the medical and surgical staffs in the management of goiter cases was continued in the follow-up observation of these patients. Members of both groups met twice a month in the thyroid follow-up clinic, where about thirty patients were seen at each session. The follow-up clinic worked in close cooperation with members of the thyroid clinic of the outpatient department (Dr. Benjamin Eliasoph and his staff, including a social service worker). The patients were seen by appointment. If necessary they were sent for further study to the thyroid clinic and referred back to the follow-up clinic with a detailed report and careful check up. Thus we were able to follow up 248 of our 360 patients and to classify them into three groups, according to the final results: group 1 (good), 225 cases; group 2 (fair), nineteen cases; group 3 (poor), four cases. The subsequent course of the remaining 112 patients could not be ascertained because contact with them had been lost.

Any grouping is subject to individual and personal impression. This factor, however, was minimized as the category to which a patient was assigned was decided by a number of physicians and not solely by the operating surgeon.

We have often been asked about our position toward x-ray treatment of exophthalmic goiter. We are opposed to this form of treatment in primary exophthalmic goiter. We have rarely seen a definite cure following x-ray or radium therapy. When improvements are seen following roentgen therapy, one is uncertain whether to ascribe this to a remission in the disease rather than to a specific effect of the x-ray treatment. Furthermore, any subsequent operative procedure is probably rendered more difficult, owing to a tendency to excessive bleeding and marked periglandular adhesions. However, in a few relapsing cases, especially when the symptoms are caused by a small mass of recurrent or persistent thyroid tissue, we have seen some very good results from x-ray therapy.

SUMMARY

1. Of the 460 patients with thyroid disease not operated on previously, who were treated surgically from April 1, 1932, to April 1, 1937, 360 cases belonged to the toxic group and 100 cases were nontoxic.

2. The mortality (three cases) occurred in the toxic group.

3. The mortality (including one suicide) was 0.8 per cent among the primary cases of exophthalmic goiter.

4. Operative deaths numbered two (0.5 per cent) among the primary cases.

5. There were two operative deaths among twenty-six cases of recurrent exophthalmic goiter.

6. Twenty per cent of the patients were operated on in two stages.

1155 Park Avenue—124 East Sixty-First Street.

THE ONE HOUR-TWO DOSE DEXTROSE TOLERANCE TEST (EXTON-ROSE PROCEDURE)

DIAGNOSTIC SIGNIFICANCE

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The present study is a part of a survey [1] of dextrose tolerance tests of various types used in the Mayo Clinic between Nov. 1, 1935, and June 30, 1938, inclusive. The present report is confined to the analysis of results obtained with the one hour-two dose test introduced in 1931 by Exton and Rose.[2] A criterion for interpreting this test is presented which in our experience has given fewer doubtful laboratory diagnoses than could be obtained by other criteria applied in this test, or by any criteria applicable in other oral tests for dextrose tolerance.

Following the discovery of chemical procedures by which the presence or absence of sugar in the urine can be accurately determined, it was noted that glycosuria cannot be constantly demonstrated in patients with mild diabetes. In them glycosuria was found most frequently to follow the ingestion of certain foodstuffs, notably those that contain a high percentage of carbohydrate. Tests utilizing the principle of this observation were then introduced, with the hope that normal and diabetic individuals could be differentiated from one another by this means. An individual in whom diabetes was suspected was given an amount of carbohydrate ranging from 50 to 200 Gm. The urine was then examined at varying intervals for the presence of sugar. The discovery of glycosuria was thought sufficient to warrant a diagnosis of diabetes. This method, however, soon fell into popular disrepute because the ability of both normal and diabetic individuals to handle carbohydrate was subject to such wide variation that the test was unreliable. The objections to the method have been well summarized by Allen [3] and by Hamman and Hirschman.[4]

From the Division of Clinical Pathology, Section on Parasitology (Dr. Magath), the Division of Biometry and Medical Statistics (Dr. Berkson), and the Division of Biometry and Medical Statistics (Mr. Gage), the Mayo Clinic.

1. Matthews, M. W.: A Study of the One Dose Three Hour (Standard) and the Two Dose One Hour (Exton-Rose) Glucose Tolerance Tests, unpublished thesis, Graduate School, University of Minnesota (the Mayo Foundation), February 1939.

2. Exton, W. G., and Rose, A. R.: Diabetes as a Life Insurance Selection Problem, Proc. A. Life Insur. M. Dir. America. **18:** 252-286, 1931.

3. Allen, F. M.: Studies Concerning Glycosuria and Diabetes, Boston, W. M. Leonard, 1913, pp. 22-23.

4. Hamman, Louis, and Hirschman, I. I.: Alimentary Hyperglycemia and Glucosuria as a Test of Sugar Tolerance, Tr. A. Am. Physicians **31:** 355-364, 1916; Studies on Blood Sugar: 1. Alimentary Hyperglycemia and Glycosuria as a Test for Sugar Tolerance, Arch. Int. Med. **20:** 761-808 (Nov.) 1917.

The work of MacGregor, of Rollo and Ambrosini, of Bang and of Jacobson has been cited by Bailey.[5] In 1856 the dependence of glycosuria on an increase of the concentration of sugar in the blood above the normal level was recognized by MacGregor and by Rollo and Ambrosini. The methods of analysis advocated by these workers were so complicated and inaccurate that dependence could not be placed on their observations. Bang in 1913 introduced the first satisfactory and clinically applicable method for the accurate determination of the blood sugar level. Jacobson in the same year noted that the ingestion of carbohydrate is followed by a rapid and often marked hyperglycemia. Fat and protein were found to produce no particular variation in the blood sugar level. These observations suggested to Hopkins,[6] to Janney and Isaacson [7] and to Hamman and Hirschman that the administration of carbohydrate followed by frequent determinations of the blood sugar might be used to determine the ability of an individual to handle carbohydrate. The use of such carbohydrates

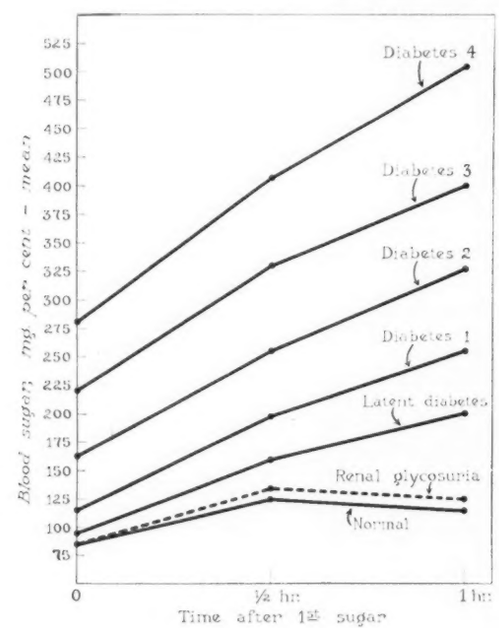

Chart 1.—Average blood sugar value (in milligrams per hundred cubic centimeters of blood) of members of this study.

as bread, crackers and oatmeal gruel as the test substance gave disappointing results. Apparently these products were broken down into their component food elements so slowly that their subsequent absorption from the intestinal tract imposed a metabolic strain on only those patients in whom a serious derangement of carbohydrate metabolism was present. Mild or even moderately severe cases of diabetes were frequently considered to have a normal metabolism for carbohydrate when this method was used.

Hamman and Hirschman in 1917 and Janney and Isaacson in the following year independently introduced dextrose as the test substance for determining the individual's ability to tolerate carbohydrate. The methods advocated by these two groups of observers differed only in the amount of dextrose that was administered. The former proposed the use of a standard amount of dextrose, namely 100 Gm., while the latter advocated the use of dextrose in proportion to the number of pounds of body weight. The amount that was found to be most satisfactory was 1.75 Gm. of dextrose per kilogram of body weight. These two methods constitute essentially what is now known as the standard dextrose tolerance test. That this test has not proved a completely satisfactory procedure is demonstrated by the number of modifications that have at one time or another been proposed. It is not our purpose in this paper to enter into a discussion of all these various modifications. However, a comparatively recent modification of the test by Exton and Rose has gained widespread popularity, and it is with this modification that we here are primarily concerned.

The Exton-Rose procedure is based on what is known as Allen's [8] paradoxic law of dextrose utilization. Briefly stated, the law is: The more sugar that is given to a normal individual, the more that is utilized. Limits of tolerance in nondiabetic individuals [9] are all apparent, not real. There is no real limit to the ability of a normal person to utilize dextrose. In contrast, the inability of the person suffering from diabetes to handle dextrose is real. Large doses of sugar in these individuals are not utilized and assimilation may be made worse instead of better by overdosage. Exton and Rose, on the basis of this law, formulated the one hour-two dose dextrose tolerance test, or, as it is perhaps better known, the Exton-Rose procedure.

The technic of the test is as follows: One hundred Gm. of dextrose is dissolved in 650 cc. of water, making approximately a 15 per cent solution. This solution is flavored with lemon juice and is divided into two equal parts, each containing 50 Gm. of dextrose. The mixture is served cold. Following an overnight fast the bladder is emptied as completely as possible, and then the following steps are taken: (1) samples of blood and urine are collected and the first dose of dextrose is given, from one to two minutes being allowed for its ingestion; (2) thirty minutes after the ingestion of the dextrose a second sample of blood is collected and the second dose of dextrose is given, from one to two minutes being allowed for its ingestion, and (3) thirty minutes after the ingestion of the second dose of dextrose a third sample of blood and a second sample of urine are collected.

There is much physiologic research that supports the contention that the Exton-Rose procedure is based on sound physiologic principles. Hamman and Hirschman,[10] MacLean and de Wesselow,[11] Hansen,[12] Foster,[13] Lennox [14] and Hale-White and Payne [15] found that, if successive doses of dextrose are given

5. Bailey, C. V.: Studies on Alimentary Hyperglycemia and Glycosuria, Arch. Int. Med. **23:** 455-483 (April) 1919.

6. Hopkins, A. H.: Studies in the Concentration of Blood Sugar in Health and Disease as Determined by Bang's Micro-Method, Am. J. M. Sc. **149:** 254-267 (Feb.) 1915.

7. Janney, N. W., and Isaacson, V. I.: The Influence of Thyroidectomy on the Blood Sugar, Proc. Soc. Exper. Biol. & Med. **14:** 99-100, 1916-1917; A Blood Sugar Tolerance Test, J. A. M. A. **70:** 1131-1134 (April 20) 1918.

8. Allen, F. M.: Studies Concerning Glycosuria and Diabetes, Boston, W. M. Leonard, 1913, p. 1050.

9. This applies only to dextrose administered by mouth. Given intravenously, tolerance for dextrose is very definitely limited by the rate of administration, as was demonstrated by Blumenthal (quoted by Woodyatt, Sansum and Wilder) and later, with more precision of method, by Woodyatt, Sansum and Wilder (Prolonged and Accurately Timed Intravenous Injections of Sugar, J. A. M. A. **65:** 2067-2070 [Dec. 11] 1915. Wilder, R. M., and Sansum, W. D.: d-Glucose Tolerance in Health and Disease, Arch. Int. Med. **19:** 311-334 [Feb.] 1917).

10. Hamman, Louis, and Hirschman, I. I.: Studies on Blood Sugar: IV. Effects on the Blood Sugar of the Repeated Ingestion of Glucose, Bull. Johns Hopkins Hosp. **30:** 306-308 (Oct.) 1919.

11. MacLean, H., and de Wesselow, O. L. V.: The Estimation of Sugar Tolerance, Quart. J. Med. **14:** 103-119 (Jan.) 1921.

12. Hansen, Karen M.: Investigations on the Blood Sugar in Man: Conditions of Oscillations, Rise and Distribution, Acta med. Scandinav., 1923, supp. 4, pp. 1-224.

13. Foster, G. L.: Studies on Carbohydrate Metabolism: II. An Interpretation of the Blood Sugar Phenomena Following the Ingestion of Glucose, J. Biol. Chem. **55:** 303-314 (Feb.) 1923.

14. Lennox, W. G.: Repeated Blood Sugar Curves in Nondiabetic Subjects, J. Clin. Investigation **4:** 331-352 (Aug.) 1927; Stimulation of the Sugar-Regulating Mechanism as Shown by Duplicate Blood Sugar Curves, J. Biol. Chem. **73:** 237-249 (May) 1927.

15. Hale-White, R., and Payne, W. W.: The Dextrose Tolerance Curve in Health, Quart. J. Med. **19:** 393-410 (April) 1926.

to man or animal on the same day, the second blood sugar curve reaches a peak at a lower level than the first curve, the third curve lower than the second, and so on. In the United States the phenomenon has come to be known as the Hamman-Hirschman effect; in Germany as the Staub[16]-Traugott[17] phenomenon. Thalhimer, Raine, Perry and Buttles[18] observed a rise in the blood sugar during the first hour in which 10 per cent solution of dextrose was given intravenously. Although the injection was continued at the same rate, the blood sugar level during the second hour declined progressively. Following the injection, hypoglycemic levels were often reached and in some cases symptoms of a mild hypoglycemic reaction were experienced.

The common explanation of the phenomena cited in these experiments is that carbohydrate stimulates the pancreas to produce more insulin and by repeated stimulation so much insulin is produced that the excessive amount causes hypoglycemia. Soskin and his co-workers[19] have attacked this conclusion and, on the basis of a series of experiments on dogs, have maintained that the pancreas is not essential for such a reaction. On the other hand Ricketts,[20] also on experimental grounds, has challenged Soskin's interpretations. Without denying that the liver may play an independent part in the regulation of the blood sugar, the experiments of Ricketts indicate, he concluded, that the proper functioning of the liver under normal circumstances depends on the availability of an extra supply of insulin by the pancreas at the time of ingestion of carbohydrate.

The principal advantages of the Exton-Rose test over the standard test of tolerance for dextrose are as follows: 1. The shorter duration of the test tends to diminish the influence of certain external factors, such as hunger, anxiety, emotion, fatigue and impatience, on the character of the tolerance curve. Exton and Rose concluded that no more information as regards carbohydrate utilization could be obtained if the test was extended over a longer period than one hour. 2. Fewer venipunctures and fewer chemical determinations are necessary than under the standard test.

ANALYSIS OF RESULTS OBTAINED WITH THE EXTON-ROSE TEST OF TOLERANCE FOR DEXTROSE

In the present study a statistical analysis has been made of the results of the Exton-Rose procedure in a group of 117 individuals that were considered to have a normal tolerance for carbohydrate, a series of 304 individuals with diabetes that had been clinically graded according to the severity of the disease, and a series of seventy persons for whom the clinical diagnosis was renal glycosuria. In all three of these arbitrary classifications we have eliminated all cases with an associated condition, other than the disease diabetes, that might possibly influence the effect of ingested dextrose on the level of the blood sugar.

The diagnosis in some of these cases may not have been correct. On the contrary, being based on clinical judgment, it was necessarily subject to error. Some sort of classification was necessary, however, and as each diagnosis was based on a thorough study of all aspects of each case by clinicians with special experience in diabetes[21] it was considered the best basis available. An important part of this study consisted in a comparison of the blood sugar level during the various phases of the reaction with the clinical diagnosis previously recorded. It will occur to one that there is an element of circularity involved, for it may be said that the clinical diagnosis was based on the blood sugar observations. The objection is not as serious as it might appear to be. In the first place the clinical diagnoses were by no means based on blood sugar determinations alone but were made on clinical observations in conjunction with all laboratory examinations. Secondly, our conclusions, as will appear, are in favor of criteria other than those that were used to interpret the results of the Exton-Rose tests at the time the diagnosis was made, for these criteria are in fact a result of this study.

All patients with diabetes in the Mayo Clinic receive a clinical grading depending on the severity of the disease. An individual is said to have latent diabetes or diabetes grade 1 if the urine can be maintained free from sugar on a qualitatively restricted diet. It is very doubtful if any one could distinguish clinically, or by any other method that we now have, between latent diabetes and diabetes grade 1. The term latent diabetes is reserved for the mildest form of the disease seen in practice. In most of these cases a dextrose tolerance test is necessary to establish the presence of the disease. Grade 2 diabetes exists if a weighed diet providing adequate calories and containing not more than 200 Gm. of carbohydrate is necessary to control the glycosuria. Grade 3 diabetes is said to be present if, in addition to such a weighed diet, 30 units or less of insulin each day is necessary to maintain the urine free from sugar. Grade 4 diabetes is diabetes that requires such a weighed diet and an amount of insulin greater than 30 units each day for its control.

TABLE 1.—*Averages and Range of Variation of Blood Sugar Values (in Milligrams per Hundred Cubic Centimeters of Blood) of Members of This Study*

		Fasting Blood Sugar Reading		½ Hr. Reading		1 Hr. Reading	
Clinical Diagnosis	Number of Cases	Average	Range	Average	Range	Average	Range
Normal persons	117	84.6	63-110	125.9	79-176	114.8	54-179
Renal glycosuria	70	85.4	70-103	134.2	96-168	126.5	63-167
Diabetes							
Latent	37	94.5	73-139	159.4	116-246	200.5	161-273
Grade 1	210	114.5	68-234	197.4	111-319	275.4	167-423
Grade 2	30	162.0	84-268	255.2	173-376	327.0	154-484
Grade 3	22	220.4	93-403	330.8	127-536	390.7	182-626
Grade 4	5	281.6	128-572	407.0	246-698	504.4	341-770
All forms of diabetes	304	127.0	68-572	211.3	111-698	270.1	154-770

Statistical analyses of the means and range of the blood sugar determinations during the various phases of the Exton-Rose procedure are summarized in table 1 and are presented graphically in chart 1.

The fasting blood sugar in those individuals whose carbohydrate metabolism was considered normal ranged from 63 mg. to 110 mg. per hundred cubic centimeters of blood. Only five persons had a fasting blood sugar that exceeded 100 mg. and in but one of these did the fasting blood sugar reach a height of 110 mg., which was the maximal concentration in the series. In contrast the fasting blood sugar readings for the persons

16. Staub, H.: Bahnung im intermediären Zuckerstoffwechsel, Biochem. Ztschr. **118:** 93-102, 1921.

17. Traugott, Karl: Ueber das Verhalten des Blutzuckerspiegels bei wiederholter und verschiedener Art enteraler Zuckerzufuhr und dessen Bedeutung für die Leberfunktion, Klin. Wchnschr. **1:** 892-894 (April 29) 1922.

18. Thalhimer, William; Raine, Forrester; Perry, Margaret C., and Buttles, Jane: Effect of Injections of Dextrose and of Insulin and Dextrose on Blood Sugar: Preliminary Report, J. A. M. A. **87:** 391-392 (Aug. 7) 1926.

19. Soskin, Samuel; Allweiss, M. D., and Cohn, D. J.: Influence of the Pancreas and the Liver on the Dextrose Tolerance Curve, Am. J. Physiol. **109:** 155-165 (July) 1934.

20. Ricketts, H. T.: Carbohydrate Tolerance After Protamine Insulin: Its Bearing on the Physiology of Insulin Secretion, J. Clin. Investigation **17:** 795-801 (Nov.) 1938.

21. The diagnosis in every instance was made by Dr. E. J. Kepler, Dr. E. H. Rynearson or Dr. R. M. Wilder.

with latent or grade 1 diabetes ranged from 68 mg. to 234 mg. per hundred cubic centimeters of blood. Only 21 per cent of the members of this group had fasting blood sugar determinations that exceeded 120 mg. There was a 70 per cent overlap of the fasting blood sugar readings of the diabetic group into the range of the normal series (chart 2).

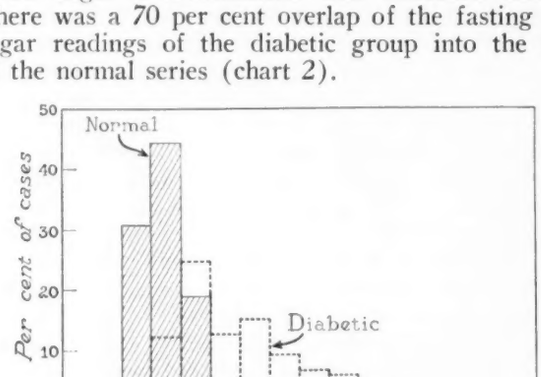

Chart 2.—Distribution of fasting blood sugar readings in 117 normal individuals and 247 persons with latent or grade 1 diabetes.

The average blood sugar level at any time point of the test is progressively elevated as one ascends the scale from normality and mild diabetes to the severer forms of the disease. In normal individuals and persons with renal glycosuria the rise in the blood sugar one-half hour after dextrose has been given is noted to be moderate when compared with the average rise that occurs in diabetes during the same period. The characteristic rise-fall reaction of the concentration of sugar in the blood of normal individuals and persons with renal glycosuria at the half hour and one hour points respectively is evident. The only significant distinction between normal individuals and persons with renal glycosuria as far as the tolerance test is concerned is the excretion of sugar in the urine by members of the latter group. In the various grades of diabetes the rise-fall reaction is absent, the average blood sugar value at one hour being higher than the average blood sugar value at the half hour reading. The importance of this observation will be referred to later.

TABLE 2.—*Age Distribution: Average Blood Sugar Values During the Various Phases of the Reaction in Normal Individuals and Persons with Latent and Grade 1 Diabetes*

	Normal				Latent and Grade 1 Diabetes			
	Number of	Average B. S. Readings			Number of	Average B. S. Readings		
Age, Years	Cases	F. B. S.	½ Hr.	1 Hr.	Cases	F. B. S.	½ Hr.	1 Hr.
0-29	34	82.5	121.8	103.8	14	99.6	163.7	234.6
30-49	57	84.9	127.1	118.6	120	108.1	189.7	241.3
50-79	26	86.9	128.5	121.4	113	116.6	196.7	255.1
Total	117	84.6	125.9	114.8	247	111.5	191.7	247.2
Youngest			2½ years				2 years	
Oldest			68 years				75 years	

Many investigators have reported a progressive elevation of the tolerance curve with advancing age. An analysis of our data supports this conclusion. Table 2 shows for the normal and grade 1 diabetic groups the effect of advancing age on the blood sugar values at the various phases of the reaction. It is seen that for all determinations, the fasting, half-hour and hour readings, the concentrations of sugar in the blood progressively increase with age.

The next step in our analysis was to apply the criteria that have been proposed by Exton and Rose and also those of Gould, Altshuler and Mellen [22] to the group of 117 normal individuals and 247 persons with latent or grade 1 diabetes. The criteria of Exton and Rose are:

A. *Normal tolerance curve:*

1. A fasting blood sugar within the normal limits of the particular blood sugar method employed.

2. A rise in the blood sugar which does not exceed 75 mg. in the thirty minute sample.

3. The blood sugar in the sixty minute sample is less, the same, or does not exceed the thirty minute sample by more than 5 mg.

4. All urine samples are negative to the Benedict test.

B. *Diabetic tolerance curve:*

1. A more or less steep curve of not less than 10 mg. of blood sugar following the second dose of dextrose.

2. The relation of the blood and urine sugar values to the severity of the disease.

C. *Renal glycosuria tolerance curve:*

1. Blood sugars which follow the normal tolerance curve or in any event never reach the diabetic level.

2. Sugar in both urine specimens.

D. *Alimentary glycosuria tolerance curve:*

1. Blood sugars that follow the normal curve even when the level is higher than normal.

2. A sugar-free urine after fasting, with sugar in the final urine specimen.

TABLE 3.—*Comparison of Criteria When Applied to 117 Clinically Normal Individuals and 247 Persons with Latent or Grade 1 Diabetes*

	Normal Individuals Diagnostic Criteria Applied				Latent and Grade 1 Diabetes Diagnostic Criteria Applied			
	Exton-Rose		Gould et Al.		Exton-Rose		Gould et Al.	
Diagnosis According to Criteria	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Normal	85	72.7	75	64.1	1	0.4	1	0.4
Diabetes	22	18.8	..	....	236	95.5	191	77.3
Nondiagnostic	10	8.5	42	35.9	10	4.1	55	22.3
Total	117	100	117	100	247	100	247	100

According to our interpretations of these criteria, if the fasting blood sugar is within normal limits and if the one hour reading does not exceed the half hour value by 10 mg. or more, even though the half-hour blood sugar determination is as high as 245 mg., the case cannot be considered as diabetic. It would seem that such a reaction is definitely abnormal and the possibility of diabetes should be seriously considered. Apparently but one requisite is necessary according to the criteria of Exton and Rose for a diagnosis of diabetes, and that is that the hour blood sugar determination should exceed the half hour reading by 10 mg. or more. If this condition is not fulfilled and the fasting blood sugar exceeds 120 mg., the case can be considered neither diabetic nor normal, and therefore the tolerance curve must be nondiagnostic. When the rise in the blood sugar one hour after the ingestion of the first dose of dextrose lies between 5 and 10 mg. above the half hour reading, again it must be called nondiagnostic. A curve that has a half hour blood sugar reading that is more than 75 mg. higher than the fasting value, while the other values of the curve are within normal limits, according to the criteria must be called alimentary hyperglycemia.

22. Gould, S. E.; Altshuler, S. S., and Mellen, H. S.: The One-Hour Two-Dose Glucose Tolerance Test in the Diagnosis of Diabetes Mellitus, Am. J. M. Sc. **193:** 611-617 (May) 1937.

The criteria of Gould, Altshuler and Mellen are:

A. *Normal tolerance curve:*

1. The fasting blood sugar is less than 120 mg.
2. The half hour level is less than 50 mg. above the fasting value.
3. The level of the blood sugar at one hour is less than 30 mg. above the half hour value.

B. *Diabetic tolerance curve:* The presence of only two of the following three conditions indicates diabetes:

1. A fasting blood sugar of 120 mg. or over.
2. A half hour level of 50 mg. or more above the fasting value.
3. A one hour level of 30 mg. or more above the half hour level.

The difficulties that these criteria encounter are at once evident. Two out of the three criteria noted must be present in order to diagnose diabetes. Even if the fasting blood sugar level were grossly abnormal, say 400 mg. per hundred cubic centimeters of blood, if the half hour reading was less than 50 mg. above this figure and the hour reading was less than 30 mg. above the half hour determination the case could be called neither normal nor diabetic. Such a tolerance curve must therefore be nondiagnostic. The same reasoning applies when the half hour blood sugar reading exceeds the fasting level by more than 50 mg., while the two other values are within the normal limits that are specified by the criteria. Similarly, if the blood sugar at the one hour determination is 30 mg. or more above the half hour value, while the other readings are within the limits of normal as defined by the criteria of these investigators, the curve is again nondiagnostic. Gould and his collaborators do not consider the diagnosis of renal glycosuria and alimentary hyperglycemia. When we apply their criteria we shall consider renal glycosuria as a normal tolerance curve with glycosuria. An alimentary hyperglycemia type of curve fulfils only one of the three criteria, two of which are necessary for the diagnosis of diabetes, and cannot be considered as normal because it exceeds the 50 mg. rule of the half hour reading; it must therefore be called nondiagnostic. With such a variety of confusing combinations we should expect such criteria to yield a large percentage of nondiagnostic tolerance curves.

TABLE 4.—*Estimation of Effectiveness of Criteria in Designating Cases in Agreement with Clinical Diagnosis*

		Correctly Diagnosed by Criteria			
		Exton-Rose		Gould et Al.	
Series	Number	Number	Per Cent	Number	Per Cent
Normal	117	85	72.7	75	64.1
Diabetes	247	236	95.5	191	77.3
Total	364	321	88.2	266	73.1

TABLE 5.—*Effectiveness of Blood Sugar Levels as Criteria for Designating Cases in Agreement with Clinical Diagnosis*

	Critical Values of Blood Sugar (Mg. per 100 Cc. Blood)		Correctly Diagnosed by Criteria of Blood Sugar Level					
			117 Normal		247 Diabetic		364 Total Cases	
Blood Sugar Reading	Normal	Diabetic	Number	Per Cent	Number	Per Cent	Number	Per Cent
Fasting blood sugar	Less than 90	90 or more	74	63	218	88	292	80
½ hour blood sugar	Less than 142	142 or more	88	75	237	96	325	89
1 hour blood sugar	Less than 158	158 or more	111	95	247	100	358	98

Tables 3 and 4 summarize the results of designating the normal and diabetic series according to the criteria of Exton and Rose and of Gould and his co-workers. It is seen from table 3 that, considering the 117 individuals clinically diagnosed as nondiabetic, 73 per cent were diagnosed normal by the Exton-Rose criteria and 64 per cent by the criteria of Gould and his co-workers.

TABLE 6.—*Distribution of the One Hour Blood Sugar Readings in 117 Normal Individuals and 247 Persons with Latent or Grade 1 Diabetes*

Blood Sugar Reading, Mg. per 100 Cc. of Blood	117 Normal Individuals		247 Persons with Latent or Grade 1 Diabetes	
	Number	Per Cent	Number	Per Cent
40-59	1	0.9	..	....
60-79	7	6.0	..	....
80-99	32	27.3	..	....
100-119	29	24.8	..	....
120-139	22	18.8	..	....
140-159	20	17.1	..	....
160-179	6	5.1	19	7.7
180-199	..	....	25	10.1
200-219	..	....	43	17.4
220-239	..	....	35	14.2
240-259	..	....	37	15.0
260-279	..	....	25	10.1
280-299	..	....	24	9.7
300-339	..	....	35	14.2
400 plus	..	....	4	1.6
Total	117	100	247	100
Average	114.8		247.2	
Range	54-179		161-423	

Of the 247 individuals in the diabetic series, 96 per cent were designated diabetic by the Exton-Rose criteria and 77 per cent by the criteria of Gould and his co-workers. In table 4 we see that, considering the entire series of 364 individuals, the application of the Exton-Rose criteria yielded diagnoses in agreement with clinical diagnosis in 88 per cent of the cases, while that of the criteria of Gould and his co-workers yielded 73 per cent in agreement with the clinical diagnosis.

It appeared to us on the basis of general observations of the level of the blood sugar at the fasting, half hour and hour points that a better differentiation between normal subjects and persons with diabetes might be made by considering the level of the blood sugar itself rather than the change of the value from one time to the next. Since each observation is necessarily subject to variation and error, the difference between two observations, say, at the half hour and hour points, is, a priori, subject to more variability than the values themselves, though this is not necessarily true. At any rate we undertook to make an objective examination on the basis of the absolute values of the blood sugar determinations at each phase of the tests (table 1, chart 1). We decided to use as a criterion to demarcate normal individuals from persons with latent diabetes a value of the blood sugar half

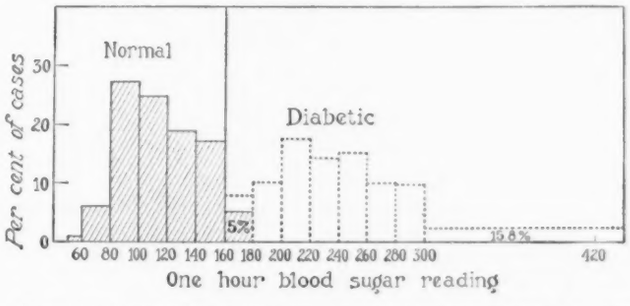

Chart 3.—Distribution of the one hour blood sugar readings in 117 normal individuals and 247 persons with latent or grade 1 diabetes.

way between the mean values for the particular point in the test. Thus, utilizing the fasting blood sugar as a criterion, the mean value for the normal group was 84.6 mg. per hundred cubic centimeters and the mean value for the latent diabetic group was 94.5 mg.; averaging these two groups, the figure of 90 mg. is obtained. Accordingly we reasoned that an individual who had a fasting blood sugar in excess of 90 mg. would be more likely to be diabetic. Conversely, a fasting blood sugar below 90 mg. would be more indicative of a normal tolerance for carbohydrate. Similarly, a half hour blood sugar value of 142 mg. and an hour reading of 158 mg. were selected as critical levels. The results of applying these criteria to the 117 normal individuals and the 247 persons with latent or grade 1 diabetes are shown in table 5.

In table 5 it is seen that, using the fasting blood sugar alone, 63 per cent of the normal persons and 88 per cent of the persons with diabetes would have been designated in agreement with the clinical diagnosis, giving for the entire series of 364 cases 80 per cent designated in agreement with the clinical observations by the criterion of the fasting blood sugar level alone. If the half hour blood sugar reading is employed for the entire series, it is seen that 89 per cent were designated in agreement with the clinical diagnosis. If the hour reading of the blood sugar is used, 95 per cent of the normal persons were designated in agreement with the clinical findings and all the patients with diabetes were so designated, making, for the entire series, a designation of 98 per cent in agreement with the clinical diagnosis. This very close agreement, using the simple criterion of the level of the blood sugar at the hour reading, is due to the fact that according to the observations in our series the distribution of the hour reading is widely divergent in the normal and diabetic groups. This is shown by table 6 and chart 3.

It may be emphasized again that the criterion of the value of the blood sugar at the hour reading could not have been the one employed in making the clinical diagnosis in these cases, since this criterion was developed in the course of this study after all the clinical diagnoses had been designated in the histories.

COMMENT

The finding that the value of the blood sugar at a particular time point (one hour) of the curve obtained in a one hour-two dose test of dextrose tolerance has diagnostic significance of importance is in harmony with the observations of Hansen,[23] who emphasized that the normal organism has the capacity to accelerate the removal of sugar from the blood at times when values for blood sugar would otherwise rise abnormally. A result of such regulation is the establishment of a definite upper limit or blood sugar ceiling, called by Hansen the "optimum concentration." This upper limit, when dextrose is introduced into the blood stream at a rate no greater than is possible by absorption from the bowel, is normally never exceeded. Furthermore this upper limit, as Hansen has shown, is nearly the same value as that of the renal threshold for dextrose, which explains why glycosuria is avoided no matter how much sugar is ingested by normal persons. In such persons the highest values attained by the blood sugar after the ingestion of as much as 400 Gm. of dextrose were found by Hansen to lie between 160 and 180 mg. per hundred cubic centimeters.

23. Hansen, Karen M., cited by Faber, Knud: Benign Glycosuria Due to Disturbances in the Blood Sugar Regulating Mechanism, J. Clin. Investigation **3**: 203-227 (Dec.) 1926.

Other causes of hyperglycemia being absent, a disturbance of the ability of the organism to prevent elevation of the blood sugar above what Hansen called the "optimum concentration" ought to represent a criterion of diabetes mellitus. This is exactly what is revealed by the blood sugar reading at one hour in a test like that of Exton and Rose. The amount of dextrose administered by mouth in such a test must be large enough to effect a maximum rate of absorption from the bowel at the time (one hour) blood is taken for analysis, but the amount provided in the Exton-Rose test is ample. According to Hansen as great an elevation may be obtained with 50 Gm. as with 200 or 400 Gm.

It is possible that the one hour reading of the blood sugar would be equally significant diagnostically if all the dextrose (100 Gm.) was ingested at the zero hour instead of in the two doses, each of 50 Gm. at half hour intervals, as called for in the Exton-Rose procedure. Dividing the dose is helpful, however, because it avoids an unpleasantly large dose at one time. It also is not improbable that the second dose, given thirty minutes after the first, increases the divergence of the one hour blood sugar values because of a Hamman-Hirschman (Staub-Traugott) effect in cases without diabetes. This may explain the greater diagnostic significance of the value of the blood sugar at one hour in the Exton-Rose test over that at thirty minutes.

In view of these considerations we are not suggesting any change in the procedure of the tolerance test of Exton and Rose and have limited our comments to the interpretation of the values for blood sugar obtained with the test as originally described. Our results do suggest, however, that the test may be simplified without loss of reliability by the omission of two of the three samplings of blood originally called for, namely the one before the dextrose is given and the one at thirty minutes.

CONCLUSIONS

1. Advancing age produces a progressive elevation of the blood sugar level at every phase of the blood sugar time curve obtained with the dextrose tolerance test of Exton and Rose. The degree of this, however, is insufficient to invalidate conclusions 2 and 3.

2. A fasting blood sugar that exceeds 120 mg. per hundred cubic centimeters of blood is diagnostic of diabetes. This value, however, was exceeded by only 21 per cent of the persons with diabetes in this series of cases in which diabetes was minimal. In contrast, no person in whom the carbohydrate tolerance was considered normal had a fasting blood sugar that exceeded 110 mg.

3. According to our experience, the most effective criterion, with the Exton-Rose procedure, for differentiating persons suffering from diabetes and normal persons is the hour value of the blood sugar. If 158 mg. per hundred cubic centimeters of blood is taken as the critical level so that individuals showing a blood sugar reading below this level at the hour are designated nondiabetic and individuals with readings at or above this value are designated presumptively diabetic, a high percentage of correct diagnoses can be expected. As far as the observations in this series are concerned, all individuals with values at the hour less than 154 mg. were found to be normal, and all individuals with values at the hour of 180 mg. or more were found to be diabetic. Hence these two groupings are most definite. Individuals with values at the hour between 158 and 179 mg. inclusive constituted only a small fraction of our cases (six, or 5.1 per cent, of 117 patients con-

sidered to be nondiabetic and nineteen, or 7.7 per cent, of 247 patients considered to have latent or mildest diabetes). The number of cases with a doubtful laboratory diagnosis was smaller by this criterion than by any other criterion applied to the results of the Exton-Rose test. It also was smaller than that obtained by any criteria applied to the interpretation of other oral tests for dextrose tolerance with which we have had experience.[24]

THE ROENTGEN ANATOMY OF THE SMALL INTESTINE

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Anatomically, the small intestine is a convoluted tube which begins in the upper part of the abdomen just distal to the pylorus and ends at the ileocecal valve. Roentgenologically, it is a highly active and dynamic organ with certain characteristic anatomic and physiologic features. Normal roentgen morphology is, for the most part, dependent on muscular tone, physiologic motion, mucosal pattern or a combination of these three factors.

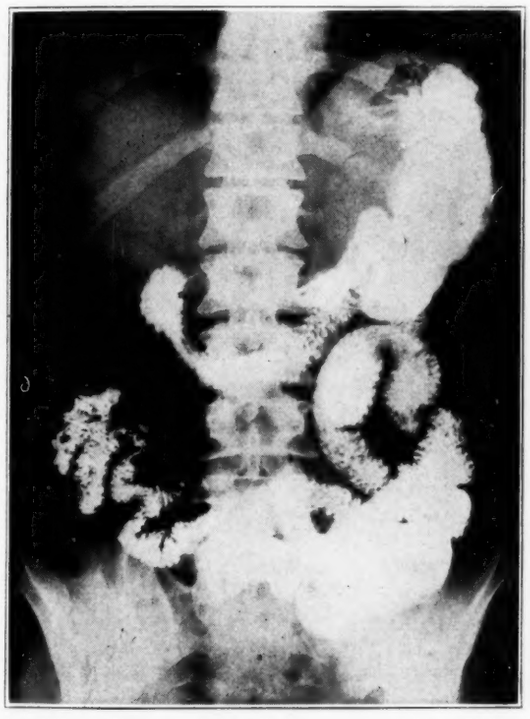

Fig. 1.—The lumen of the small intestine diminishes from above downward. This shows the roentgenologic appearance of the duodenum, jejunum and ileum.

The length of the small intestine is variable. At autopsy it may measure from 5 to 7 meters. Intubation by measured length of tubing has indicated a length of from 2.5 to 3 meters from the pylorus to the cecum. Such figures, however, may not be accurate because the intestine may telescope itself along the course of the tube and thus produce abnormal shortening. It is generally assumed that the upper three fifths of the mesenteric small intestine is jejunum and the lower two fifths is composed of ileum. On the basis of embryologic and roentgenologic data, Cole [1] has described six primary coils of small intestine. The first coil is the duodenum, while the remaining five groups comprise the ileojejunum, or mesenteric small intestine. In my experience, many variations in the appearance of these coils have occurred.

Fig. 2.—The normal mucosal pattern in the jejunum is herring bone or reticular.

In 1936 Pendergrass and his associates [2] stressed the importance of a standard type of meal for the study of the small intestine. The meal that I have used is made of 5 ounces of distilled water and 5 ounces of barium sulfate. Water is distilled to remove the chlorine, which may produce a disturbance in the roentgen appearance of the intestinal tract. A standard preparation of barium sulfate has been found to be quite satisfactory. Recently I compared this usual preparation with a meal composed of water and more finely divided barium. A striking difference in the small intestinal pattern and motility was found when these two meals were studied in the same patient.

Factors such as the composition, size and consistency of the meal, speed of gastric emptying, drugs, emotional disturbances, disease and reflex disturbances from disease outside the gastrointestinal tract are capable of producing changes in the roentgen appearance of the small intestine. In this presentation the discussion will be limited to the roentgen anatomy as seen in healthy subjects.

24. The analytic technic used in the examinations for concentration of blood sugar was that of Folin and Wu, and all specimens of blood were obtained from the vein. For other methods of analysis or for blood taken for analysis from arteries or capillaries, the values for blood sugar accepted here as criteria for diagnoses would be modified. It also must be emphasized that the diagnostic significance of any values for blood sugar will be modified by all the various conditions, other than the presence or absence of the disease diabetes, that are known to modify blood sugar time curves. Such conditions include previous fasting, preceding diets low in carbohydrate and complications such as infection and hyperthyroidism.

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Read before the joint meeting of the Section on Gastro-Enterology and Proctology and the Section on Radiology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

1. Cole, L. G., and others: Radiologic Exploration of the Mucosa of the Gastro-Intestinal Tract, St. Paul and Minneapolis, Bruce Publishing Company, 1934, p. 61.

2. Pendergrass, E. P.; Ravdin, I. S.; Johnson, C. G., and Hodes, P. J.: Studies of the Small Intestine: Effect of Foods and Various Pathologic States on Gastric Emptying and Small Intestinal Pattern, Radiology **26**: 651-662 (June) 1936.

In the normal controls that I have studied, the head of the meal reaches the cecum in from one and a half to three hours. The small intestine is completely empty in from five to six hours. The caliber of the lumen diminishes from above downward (fig. 1). Roentgenologically, one can distinguish duodenum, jejunum and ileum, although the line of demarcation between them is not well defined. The duodenum, which begins just distal to the cap at the first circular fold of mucosa, is short, wide and relatively fixed in position. It forms an incomplete loop around the head of the pancreas and may be divided into a superior, a descending, a transverse and an ascending portion. The cap and superior duodenum are usually retentive, but in the remaining portions of the duodenum peristaltic rushes and to and fro motion may be seen. In the duodenum the stream is of the intermittent type. Beyond the suspensory ligament of Treitz the speed of forward motion decreases. The barium stream tends to be continuous with an occasional peristaltic rush. Through the jejunum and ileum the progress of the meal is mostly a gradual creeping forward of the contents, becoming slower as it approaches the cecum. This progress is so slow that it is practically impossible to study the barium stream continuously because of the danger of overexposure to the patient. In some instances a complete arrest of the meal may occur in the ileum. If the patient is then allowed to eat, the contents will proceed into the colon without further delay.

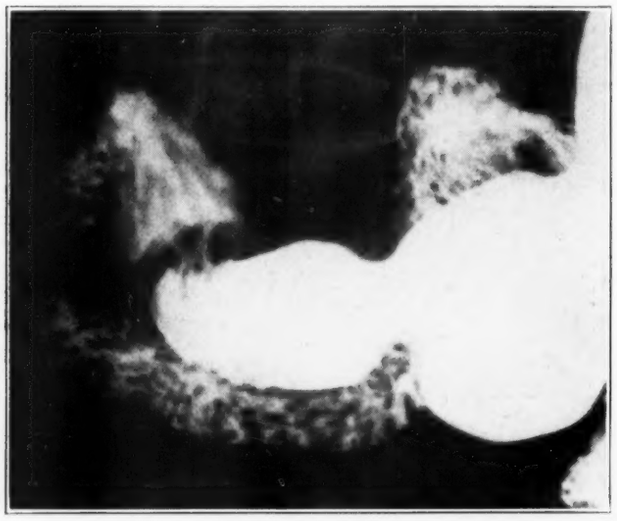

Fig. 3.—Note the longitudinal folds in the duodenal cap and the coarse reticular pattern of the remainder of the duodenum. The duodenal stream is intermittent.

Fig. 4.—A bolus of barium sulfate passing rapidly through the proximal jejunum. Note the widened loop with the obliterated mucosal pattern. Proximal to the bolus, the mucous membrane folds all points in the direction of motion.

The mucosal pattern of the small intestine shows many variations which seem to be specific for a given set of physical conditions. Such a pattern is derived from the primary circular folds of Kerkring and from the secondary induced folds which may occur in the mucous membrane. The primary folds of Kerkring are largest in the duodenum and jejunum, become smaller and less frequent in the lower jejunum and ileum and may be poorly developed or absent in the terminal ileum. They are not obliterated by distention and they persist in postmortem specimens. Such folds project into the lumen of the small intestine in a circular or spiral form. Adjacent folds may be of different heights and point in different directions. According to Forssell [3] the mucous membrane folds adapt themselves to the muscular contractions of the intestinal wall and also to the consistency and form of the meal. During roentgenographic examinations one is studying a working pattern; therefore the pattern of a given segment

Fig. 5.—The "snow flake" pattern, indicating retention of particles of barium in the mucous membrane folds after the main portion of the barium meal has passed.

3. Forssell, G.: Role of Autonomous Movements of the Gastrointestinal Mucous Membrane in Digestion, Am. J. Roentgenol. **41**: 145-165 (Feb.) 1939.

depends on its anatomic character and also on its physiologic activity at the time of the examination. In the duodenum the pattern is coarsely reticular but may sometimes resemble stacked coins (fig. 3). While the stomach and duodenum are emptying, the jejunum shows a reticular or herring bone pattern when thinly coated by barium (fig. 2). During the passage of large boluses, the pattern may be obliterated except for circular folds near the periphery (fig. 4). As the meal progresses distally a "snow flake" pattern occurs owing to retention of small quantities of barium in the vasa digestiva (fig. 5). The central lumen is variable. When small amounts of barium coat the mucous membrane, the folds can be seen to meet near the center of the intestine. When larger quantities of barium are present, one cannot be certain of the presence of a central canal because of the obliteration of the pattern. If a small

Fig. 6.—Longitudinal folds in the jejunum occurring as a result of segmental contraction.

quantity of gas is present, the central lumen may be more readily observed. Longitudinal folds of mucosa, the "barring" pattern of Forssell, may occur as a result of segmental contraction in the jejunum (fig. 6). Occasionally, one also sees a localized fuzzy appearance which I have attributed to a rapid movement at the time of examination.

In the proximal ileum the pattern is somewhat similar to that in the distal jejunum. Farther along in the ileum the pattern gradually changes. Frequently a continuous or segmented column of barium without a visible profile pattern is present. In other instances the pattern may resemble a stack of coins (fig. 7). Sometimes one observes a sharp change in density of the barium in the ileum as a result of increased secretion or dilution of the meal. Near the terminal ileum, longitudinal folds can sometimes be identified.

The frequency with which normal variations and congenital anomalies of the small intestine occur depends largely on the thoroughness of the examination and the examiner's ability to detect them.

Failure of rotation may result in finding the small intestine in the right half of the abdomen and the colon to the left side of the midline. This condition, also called mesenterium commune, is easily recognized by roentgen examination.

Fig. 7.—Mucous membrane pattern in the ileum. This appearance has been called the "stacked coin" pattern.

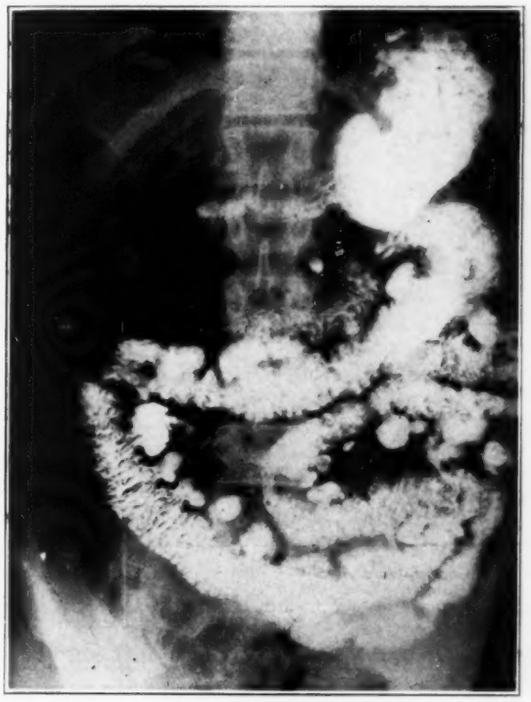

Fig. 8.—Multiple large diverticula of the small intestine. Note that they are all placed along the mesenteric border.

Intra-abdominal hernia can be diagnosed by roentgen study of the small intestine. In this condition the coils are grouped closely and they may occupy the right, left or midabdominal position. In the patients studied by

Alexander [4] the distal duodenum and duodenojejunal junction were located in an abnormal position.

Enterogenous cysts and aberrant pancreatic tissue are rare anomalies which may produce anatomic deformity of the duodenum. When small, these deformities are

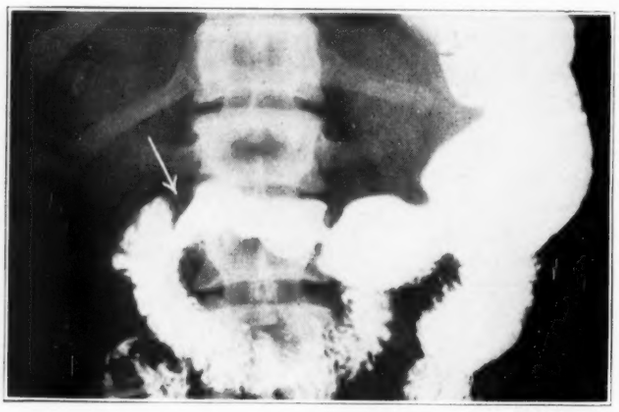

Fig. 9.—Congenital veil producing distortion of the second portion of the duodenum. This patient also had gallstones, but there were no adhesions between the gallbladder and the duodenum. The arrow points to the duodenal deformity.

seen as an obliteration of the normal mucosal pattern, with or without a central filling defect simulating a polyp.

Congenital diverticula of the small intestine occur most frequently in the duodenum. Usually placed along the inner curvature, they vary in size from a few millimeters to several inches in diameter (fig. 8).

Congenital membranes and veils attached to the duodenum may produce roentgenologic appearances

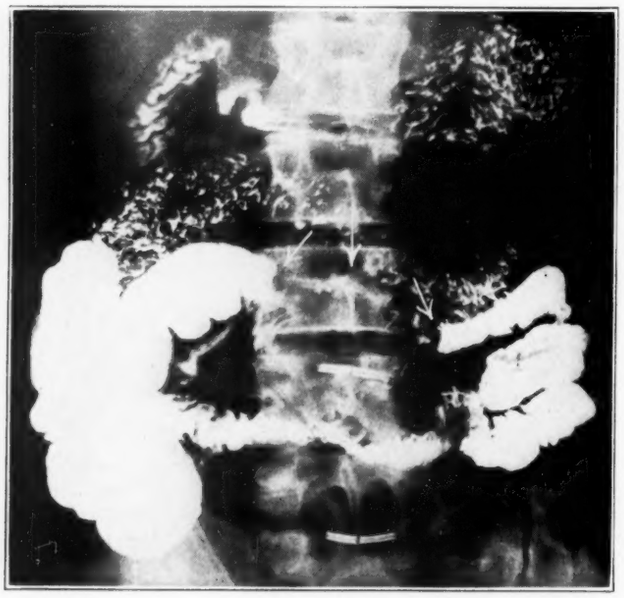

Fig. 10.—Congenital anomaly of the jejunum resulting in a narrow segment. Note the dilatation and retention of the barium proximal to the lesion. Arrows point to the area of involved intestine.

which in some instances cannot be differentiated from pericholecystic adhesions or duodenal ulcers (fig. 9).

In 1906 Ochsner [5] called attention to a more or less marked thickening of the intestinal wall from 2 to 4 cm. below the entrance of the common duct. Microscopic sections taken from various portions of the intestinal wall demonstrated that this thickness was due to an increase in the number of circular muscle fibers present. The arrangement was somewhat like that seen at the pylorus, although the fibers were spread out in a more diffuse fashion. Ochsner was of the opinion that inflammatory processes in the duodenum or biliary tract might result in delayed passage of the contents because of spasm of these muscular fibers. I have not been able to corroborate his anatomic observations by roentgen examination of healthy persons.

Congenital defects which result in a narrowed small intestinal lumen or complete atresia are most commonly found in children. In most of the cases, these defects are incompatible with life. The routine use of study of the small intestine has enabled me to diagnose in one instance a narrowed jejunum in a white man. Operation on him revealed that approximately 5 inches of the jejunum was reduced to half its normal outside circumference. The lumen of this portion of the intestine was about the size of a lead pencil (fig. 10).

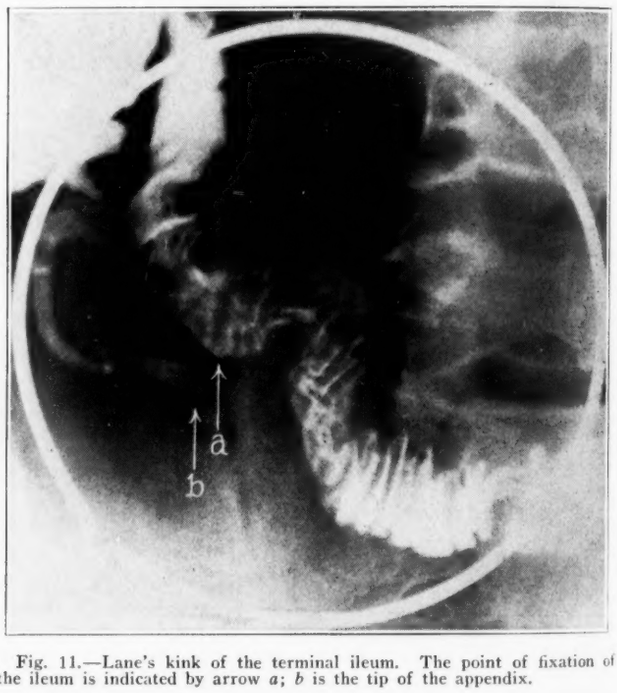

Fig. 11.—Lane's kink of the terminal ileum. The point of fixation of the ileum is indicated by arrow *a*; *b* is the tip of the appendix.

Meckel's diverticulum may sometimes be found during roentgen examination of the small intestine. In some instances this anomaly has produced a serious impairment of function as well as a definite anatomic deformity of the small intestine. I have seen a Meckel's diverticulum as large as one's thumb which was completely missed by roentgen study and two abdominal operations. In another instance the diverticulum was so large that it was mistaken for a segment of the small intestine. Whenever delayed motility occurs in the ileum, one should examine the intestine carefully for this anomaly.

Ileal stasis, a term seldom used in recent years, may result from a Lane's kink. One may suspect this condition if a partial obstruction is associated with a kinked and somewhat fixed terminal ileum. The anatomic deformity is thought to be due to adhesions which bind the mesentery of the lower ileum to the iliac fossa [6]

4. Alexander, F. K.: Roentgen Diagnosis of Intra-Abdominal Hernia, Am. J. Roentgenol. **38**: 92-101 (July) 1937.

5. Ochsner, A. J.: Constriction of the Duodenum Below the Entrance of the Common Duct and Its Relation to Disease, Ann. Surg. **43**: 80-87, 1906.

6. Jordan, A. C.: Radiography in Intestinal Stasis, Proc. Roy. Soc. Med. **5**: 9-37, 1911.

(fig. 11). Clinically, some of these patients have been suspected of having duodenal ulcer, but their symptoms have been relieved by releasing the fixation of the terminal ileum.

The value of a roentgen study of the small intestine is increased by the use of a standard type of meal and technic of examination. With such a basis a specific roentgen appearance may be established for normal subjects. Such studies may well result in a clearer conception of the roentgen anatomy in disease states.

ROENTGENOLOGIC MANIFESTATIONS OF NON-NEOPLASTIC LESIONS OF THE SMALL INTESTINE

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My purpose in this paper is to discuss the roentgenologic manifestations of the more commonly encountered non-neoplastic diseases of the small intestine. There is not a great variety of such processes. Peptic ulcer of the duodenum and of the jejunum occurring after gastro-enterostomy is omitted, because these parts are so intimately associated with the stomach that they are more properly considered in connection with lesions of that organ. Acute inflammatory processes of the small intestine are not included because patients afflicted with them rarely are, and probably never should be, submitted to roentgenologic examination. Syphilitic and actinomycotic lesions of the small intestine have been reported in the literature, but such lesions are so exceedingly rare that for practical purposes they may well be omitted from a discussion of this kind. The literature also contains reports of cases in which animal parasites, notably Ascaris lumbricoides, have been demonstrated in the small intestine at roentgenologic examination; such instances are also comparatively rare, and the condition is mentioned here only by way of recognizing it. The non-neoplastic lesions of the small intestine more commonly encountered may be listed as follows, and this discussion will be confined to these:

1. Chronic enteritis.
   Tuberculous enteritis.
   Nontuberculous enteritis.
2. Diverticula.
   Meckel's diverticulum.
3. Deficiency states.
4. Co-involvement of the small intestine by extrinsic non-neoplastic lesions.

THE ROENTGENOLOGIC EXAMINATION OF THE SMALL INTESTINE

I shall not attempt to describe the conduct of the roentgenologic examination of the small intestine in detail. However, the roentgenologic appearance of even the normal small intestine may vary widely, depending on the technic employed in the examination; therefore it seems proper to describe at least those features of the examination considered to be important.

The patient presents himself for examination in the morning after an overnight period of fasting. The first step is the roentgenoscopic survey of the abdominal field. If there is no evidence of intestinal obstruction the examination may proceed. The patient is asked to drink 8 ounces (240 cc.) of a suspension made of equal parts by volume of barium sulfate and water. The roentgenoscopic examination of the stomach and duodenum is made in the usual way. Then the examiner attempts to express as much as possible of the opaque suspension from the stomach into the duodenum and jejunum. This is the first of a series of attempts the examiner makes to prevent a wide dispersion of the opaque material through long reaches of the small intestine. Ideally the suspension will be confined to the smallest possible number of intestinal loops and will be carried down the intestinal tract as a coherent compact mass. Usually only a certain quantity can be expressed from the stomach at a single roentgenoscopic session lasting from five to ten minutes, but enough will have left the stomach to permit satisfactory examination of the entire duodenum and upper coils of jejunum. The patient is then permitted to rest for a brief interval. To accelerate the spontaneous discharge of the rest of the opaque suspension from the stomach the patient is instructed to lie relaxed on his right side, for it seems that the stomach empties itself best in this posture. After from ten to fifteen minutes a lower series of intestinal coils are filled with the opaque suspension and the patient is again submitted to roentgenoscopic examination. Periods of rest followed by roentgenoscopic observations are repeated at intervals of fifteen minutes until the stomach has delivered all but an insignificant quantity of the suspension of the opaque medium into the intestine. At about this time a lull in the more vigorous intestinal movements sets in, and unless the intestine is stimulated to activity again the opaque material tends to become widely dispersed without distending the coils in the desired way referred to. A simple palatable breakfast, preferably chosen by the patient according to his taste and custom, is a pleasant and practical way to stimulate the intestinal motility at this phase of the examination. Immediately after breakfast, periodic roentgenoscopic examinations are resumed until such time as the opaque material has made its way to the lowermost portion of the ileum and cecum. The time required for the contrast material to pass from the stomach to the cecum varies considerably in apparently normal persons. Forty-five minutes of elapsed time is not considered to be abnormally fast; four or five hours, not abnormally slow.

Roentgenographic examinations, with or without the use of the Potter-Bucky diaphragm, are made at the examiner's discretion, to clarify doubtful or suggestive areas of abnormality and to supply a permanent record of the roentgenologic manifestations. It is worthy of emphasis, however, that the roentgenoscopic examination is the cardinal roentgenologic maneuver, and, in my opinion, no number of roentgenograms could satisfactorily supplant it.

To me the most satisfactory way of examining the lowermost portion of the ileum is by filling it in retrograde direction through the ileocecal orifice at the conclusion of the examination of the colon, by using a contrast enema. Examination is made before and after the patient is permitted to empty the opaque fluid from the colon. Under these circumstances the ileal coils are elevated out of the bony pelvis, are filled with fresh, undehydrated contrast fluid, and are well visualized and readily manipulated. Retrograde filling of the lowermost portion of the ileum can be effected in most cases if the examiner will make a special effort to do so. It is well to consider the roentgenologic examination of the lowermost portion of the ileum as part of the

From the Section on Roentgenology, the Mayo Clinic.
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examination of the colon in much the same way as the examination of the duodenum is considered to be part of the examination of the stomach.

CHRONIC ENTERITIS

Pathologically, chronic enteritis, using this term in its broadest possible sense, would include chronic intestinal lesions of tuberculosis, syphilis, bacillary dysentery and lymphopathia venereum as well as lesions caused by pathogenic fungi and parasites, and lesions for which a specific etiologic agent has not as yet been determined. It is probable that these lesions, whatever their cause may be, will have very similar gross pathologic features and they will be distinguished from one another only by their microscopic characteristics. Syphilitic, mycotic, parasitic and proved specific bacillary and streptococcic forms of enteritis occur so rarely as to be negligible in a practical consideration. Tuberculous enteritis and a nonspecific form of chronic enteritis of undetermined origin are the most common types of chronic enteritis encountered in practice.

In the truly voluminous literature that has accumulated on these two forms of chronic enteritis the clinical, pathologic, roentgenologic and therapeutic phases have been studied and described so often and so well that further elaboration seems not only unnecessary but presumptuous. I wish only to emphasize that the two diseases have many clinical, morphologic and roentgenologic features in common and to submit some suggestions for making at least a presumptive roentgenologic distinction between them.

Traditionally, intestinal tuberculosis is described as being either ulcerative or hyperplastic in character. Practically, a purely ulcerative or purely hyperplastic tuberculous intestinal lesion is but rarely encountered. Usually a combination of ulceration and hyperplasia is observed, and one or the other feature is found to be predominant in the picture. A true hyperplastic tuberculous lesion of the small intestine is notoriously uncommon. Masson and McIndoe [1] reported the one case in which a lesion of this type was observed at the Mayo Clinic and, significantly, the lesion was discovered in a part of the small intestine caught in a right paraduodenal hernia. Traditionally, too, tuberculosis of the intestine is considered to be a combined enterocolic disease, that is, tuberculous lesions are observed to be distributed throughout the colon and in the small intestine as well, and especially in the ileocecal region. This distribution of tuberculous lesions is but the rule to which there are many exceptions. Proliferation, necrosis, cicatrization, ulceration and perforation, with development of extra-enteral abscesses and fistulas, are universally recognized features in the pathogenesis of tuberculous intestinal lesions.

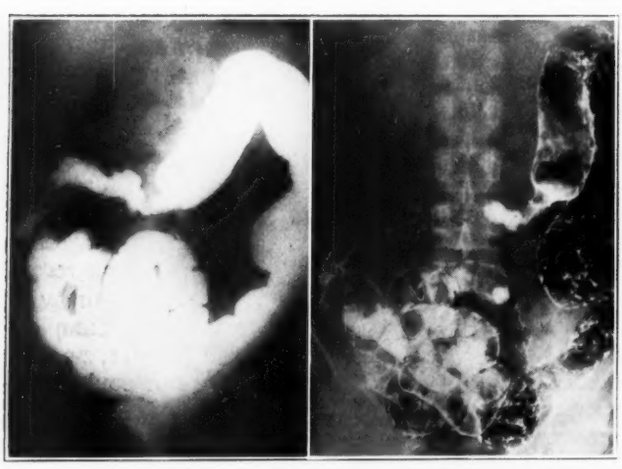

Fig. 1.—Left, colon distended with contrast enema; right, after evacuation of contrast enema and redistention with air. Tuberculous ileocolitis. The patient had cavernous tuberculosis of the right lung.

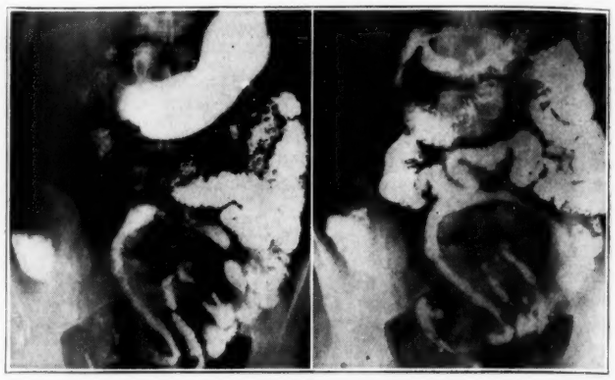

Fig. 2—Left and right, phases in the examination of the small intestine. Tuberculous ileitis. At necropsy no other focus of tuberculosis was found.

In 1932 Crohn, Ginzburg and Oppenheimer [2] reported a series of cases of benign, subacute or chronic, necrotizing and cicatrizing inflammation of the small intestine. Neither these observers nor any of the many who have conducted investigations on the cause of the disease since that time have given a satisfactory answer as to its cause. The pathologic features of the disease have been described in detail, and the similarity of the gross pathologic characteristics of this disease to those of intestinal tuberculosis is striking in all descriptions. As in tuberculous enteritis, the pathologic process is subacute or chronic; proliferation, necrosis, ulceration, cicatrization, perforation and the formation of perienteral and extra-enteral abscesses and fistulas are characteristic features. Macroscopically, it is always difficult, and usually impossible, to distinguish the nontuberculous from the tuberculous form, and cases have been reported, that of Schapiro [3] being a noteworthy example, in which the ultimate correct diagnosis was in doubt even after expert and thorough microscopic examination. If distinction between the two diseases is difficult, even when the diseased tissue is made available for macroscopic examination, it is hardly surprising that a roentgenologic differentiation should also be difficult, as indeed it is. The following observations have been found to be of value, at least in cases in which the original pathologic process has not been too badly obscured by very extensive ulceration and development of abscesses and fistulas.

Like the colon, the small intestine is a tubular organ, and since pathologic processes deform the one in much the same way as they do the other, the same roentgenologic criteria of diagnosis can be applied to the small intestine as are applied to the large intestine. There are several forms of chronic colitis and, as I have pointed out elsewhere,[4] all of them deform the

1. Masson, J. C., and McIndoe, A. H.: Right Paraduodenal Hernia and Isolated Hyperplastic Tuberculous Obstruction: Comment and Report of Case Affecting Jejunum and Ileum; Operation and Recovery, Surg., Gynec. & Obst. **50**: 29-39 (Jan.) 1930.

2. Crohn, B. B.; Ginzsburg, Leon, and Oppenheimer, G. D.: Regional Ileitis: A Pathologic and Clinical Entity, J. A. M. A. **99**: 1323-1329 (Oct. 15) 1932.

3. Schapiro, I. S.: Hypertrophic Jejuno-Ileitis—Tuberculous or Nonspecific? J. Mount Sinai Hosp. **1**: 121-124 (Sept.) 1934.

4. Weber, H. M.: The Roentgenologic Identification of Commonly Encountered Chronic Ulcerative Diseases of the Colon, Am. J. Roentgenol. **30**: 488-496 (Oct.) 1933.

colon in the same fundamental ways. The roentgenologic distinction between the different etiologic types of chronic colitis is made chiefly on the distribution of the pathologic process in the colon, but roentgenologic evidence of disease in other organs and the results of other clinical tests must frequently be drawn on to reach the final diagnosis. Besides these, the experienced observer can frequently recognize what, for want of a better term, I have called a certain "look" by which, intuitively almost, he perceives the underlying cause for the changes he sees. The roentgenologic manifestations of the different forms of chronic colitis are much more familiar than those of similar processes in the small intestine because of their very much greater incidence, but the same roentgenologic diagnostic criteria are applied to lesions of both parts of the intestine.

As has been mentioned, the tuberculous and nontuberculous forms of chronic enteritis have so much in common morphologically that the two are not readily distinguished from each other even at gross pathologic examination and, therefore, not at roentgenologic examination. But, as in the colon, close comparison of the roentgenologic appearances often shows a different roentgenologic "look" of the two diseases.[5] This is largely related to the contours the affected segment assumes when filled with the contrast material. The contours of the tuberculous intestine have typically a rougher, more corrugated, appearance corresponding to a more irregular, disconnected insemination of the ulcerohyperplastic process (figs. 1 and 2). In its roentgenologic manifestations the nontuberculous form of chronic enteritis imitates the classic, familiar picture of chronic ulcerative colitis very closely. The contours are characteristically smooth and the narrowing is uniform, corresponding to the typical diffuse, even development of the underlying pathologic process (figs. 3 and 4).

Other aids in the differentiation are chiefly those concerned with the exclusion of tuberculosis. Investigation of extra-enteral foci of tuberculosis, especially in the

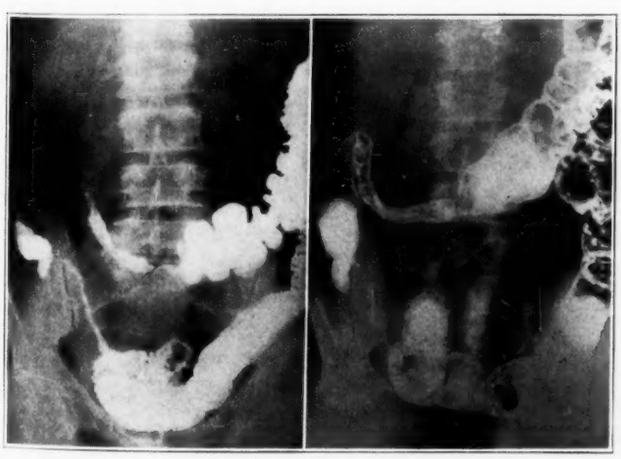

Fig. 3.—Left, colon after evacuation of the the contrast enema; right, after redistention with air. Nontuberculous ileocolitis. Microscopic examination of the resected specimen failed to show evidence of tuberculosis.

lungs, should always be made when evidence of chronic enteritis is at hand. If a focus of active pulmonary tuberculosis is found to be coexisting with any nonneoplastic lesion of the small intestine below the duodenum, the intestinal lesion should be considered tuberculous until proved otherwise. Conversely, in the absence of such a focus the intestinal lesion is likley to be nontuberculous. Isolated intestinal tuberculosis occurs just often enough, however, that this conclusion is not to be drawn definitively. Instances in which nontuberculous enteritis is associated with pulmonary tuberculosis of questionable activity have also been observed.

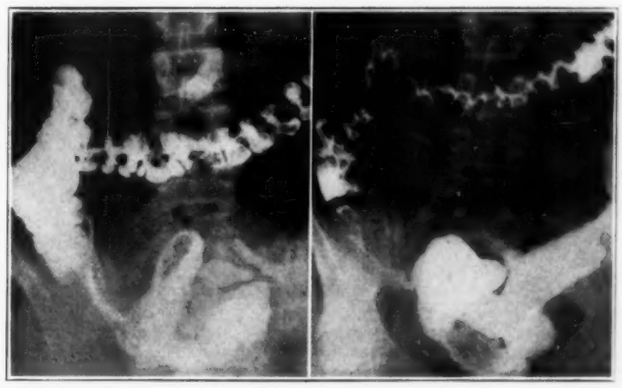

Fig. 4.—Left, ileum and upper part of colon filled with opaque suspension administered by mouth; right, after evacuation of opaque enema. Nontuberculous ileitis. At necropsy, no evidence of tuberculosis was found either in the intestine or elsewhere in the body.

Other diagnostic clues may be offered by the discovery of calcified mesenteric lymph nodes, the application of intradermal tuberculin tests and the search for Mycobacterium tuberculosis in the stools. It is granted, of course, that a definitive diagnosis will certainly not be reached in many instances, and the roentgenologic examiner will often find it necessary to confine his diagnosis to a description of the general morphologic character of the process and its distribution in the intestinal tract. His clinical and surgical colleagues will be able to carry on if this is done with a reasonable degree of accuracy.

DEFICIENCY STATES

Peculiar changes in the roentgenologic appearance of the small intestine are often observed in certain states of dietary deficiency, especially when steatorrhea, with or without diarrhea, is one of the principal clinical features. These roentgenologic changes have been seen in such conditions as nontropical sprue, pellagra, celiac disease in children, pancreatic insufficiency, chronic alcoholism and some other conditions of long continued primary or secondary nutritional deficiency. At present I am not prepared to state that the roentgenologic appearance of the small intestine is identical in all of the different types of deficiency disease enumerated. But this much can be said: Whenever these changes are encountered in the roentgenologic examination of the small intestine, they have many features in common, and a distinction between the various types of deficiency disease on the basis of roentgenologic appearances alone is not as yet attempted.

Pillai and Murthi,[6] Snell, Camp and Watkins,[7] Mackie and Pound,[8] Golden [9] and others have described the roentgenologic changes seen in these conditions. One of the surprising features is the marked depression

5. Weber, H. M.: Discussion, Proc. Staff Meet., Mayo Clin. **11:** 718-720 (Nov. 4) 1936; Regional Enteritis: Roentgenologic Manifestations, ibid. **13:** 545-550 (Aug. 31) 1938.

6. Pillai, M. J. S., and Murthi, K. N.: Radiologic Signs in Cases of Sprue: A Study of Nine Cases, Indian J. Med. **12:** 116-118 (June) 1931; abstr. Trop. Dis. Bull. **29:** 8 (Jan.) 1932.

7. Snell, A. M.; Camp, J. D., and Watkins, C. H.: Nontropical Sprue (Chronic Idiopathic Steatorrhea), Proc. Staff Meet., Mayo Clin. **10:** 177-184 (March 20) 1935.

8. Mackie, T. T., and Pound, R. E.: Changes in the Gastrointestinal Tract in Deficiency States, with Special Reference to the Small Intestine: A Roentgenologic and Clinical Study of Forty Cases, J. A. M. A. **104:** 613-618 (Feb. 23) 1935.

9. Golden, Ross: The Small Intestine and Diarrhea, Am. J. Roentgenol. **36:** 892-901 (Dec.) 1936.

of motility throughout the intestinal tract, and this is the more striking if the patient has been complaining of diarrhea. Peristaltic activity is definitely subdued, the contrast suspension making its difficult, slow way down the tract much as if it were being poured through a half-lifeless tube. Peculiar segmentation of the intestinal loops is commonly found. Contracted segments are observed to alternate irregularly with dilated ones. In another phase, a loop that was dilated is found to be contracted. The contours of well distended segments may be abnormally smooth at one period of roentgenoscopic observation, abnormally shaggy at another. The internal relief of involved loops may be markedly suppressed or markedly exaggerated. Fantastic agglomerations of the opaque suspension take place. In the normal small intestine the opaque suspension assumes a smooth homogeneous continuity; here part of it is collected in a pool in an isolated dilated segment, another part is clumped in an apparently unrelated amorphous mass, and the rest of it assumes the appearance of a flocculent precipitate throughout a long stretch of some other part of the small intestine. The changes are the more marked the more well defined is the clinical pic-

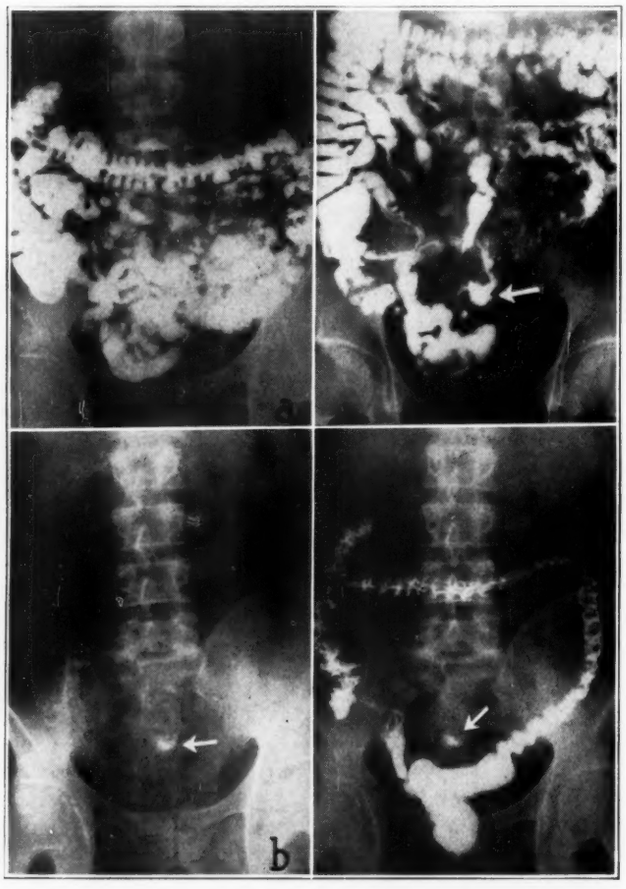

Fig. 5.—*a*, phases in the examination of the small intestine; left, the earlier phase shows no roentgenographic evidence of the diverticulum, although it was identified at roentgenoscopic examination; right, the arrow points to the diverticulum; *b*, left, the abdomen fifteen hours after administration of 2 ounces (60 cc.) of castor oil and twenty-four hours after patient took the contrast meal (*a*); the arrow points to the residue of the contrast suspension in the diverticulum; right, after evacuation of contrast enema.

ture, and the involved segments have a decided tendency to return to normal as the patient gives evidence of clinical improvement.

At the present time one can do little more than speculate about the morphologic and physiologic significance of these roentgenologic changes. In only a few cases were actual morphologic studies made available. Starr and Gardner [10] noted atrophy, dilatation and passive congestion of the entire intestinal tract; Whipple [11] described extensive deposits of neutral fat and fatty acids in the intestinal mucosa, with passive congestion and cloudy swelling of the viscera; in one of three cases reported by Blumgart [12] ileal ulceration, distention of the cecum and atrophy of its mucosa were noted. That

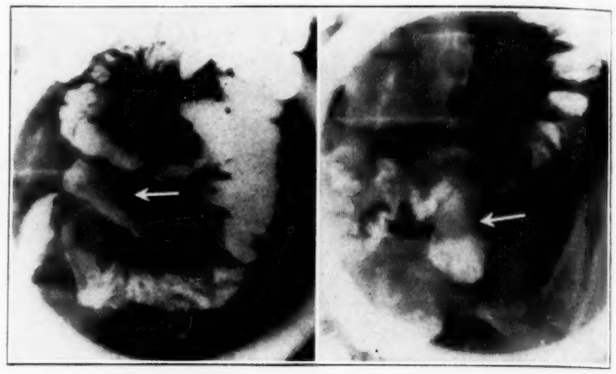

Fig. 6.—Meckel's diverticulum was diagnosed at roentgenologic examination. The patient had a marked secondary anemia and evidence of intestinal bleeding but refused to submit to operation. Left and right, phases in the examination of the small intestine.

the intestinal secretions are grossly abnormal is evident from physical and chemical examination of the stools and intestinal secretions.

On the basis of my own observations I am inclined to discredit the importance of inflammatory changes, such as edema, ulceration and infiltration of the intestine, in the production of this roentgenologic syndrome. It seems to me that the roentgenologic changes are more plausibly explained by holding the degenerative changes accountable for the abnormal motility and for some of the bizarre intestinal patterns observed, while the abnormal secretions are made responsible for the other peculiar roentgenologic manifestations.

DIVERTICULA OF THE SMALL INTESTINE

Duodenum.—Diverticula are found in the duodenum more frequently than in any other part of the intestine except the sigmoid colon. The most common site of origin is near the ampulla of Vater. They may be single or multiple, very small or very large, but even when large they are usually symptomless. In rare instances they become large enough to produce symptoms of partial or intermittent obstruction mechanically, and in this event radical therapeutic measures may be necessary for relief. It is conceivable too that ulceration may result from prolonged retention of ingested matter, and symptoms may develop from such a situation. The diagnosis is strictly roentgenologic when made before operation or necropsy. Even when small, the characteristic extraluminal outpouching is readily recognized as the contrast meal is observed as it passes along the course of the duodenum after it has passed through the pylorus. Sometimes diverticula are distended with gas or with fluid or with both.

Jejunum.—The diverticula found in the jejunum are larger, as a rule, than those in the duodenum, and they are more frequently multiple than single. In the

10. Starr, Paul, and Gardner, Lois: A Biochemical Study of Two Patients with a Condition Simulating Sprue, Am. J. Trop. Med. **10**: 283-293 (July) 1930.

11. Whipple, G. H.: A Hitherto Undescribed Disease Characterized Anatomically by Deposits of Fat and Fatty Acids in the Intestinal and Mesenteric Lymphatic Tissues, Bull. Johns Hopkins Hosp. **18**: 382-391 (Sept.) 1907.

12. Blumgart, H. L.: Three Fatal Cases of Malabsorption of Fat with Emaciation and Anemia, and in Two Acidosis and Tetany, Arch. Int. Med. **32**: 113-128 (July) 1923.

jejunum, as in the duodenum, the diverticula are usually symptomless, although instances have been reported in which the diverticula were held responsible for symptoms such as borborygmi and intermittent cramps after the ingestion of food. The diagnosis of jejunal diverticula is likewise a roentgenologic problem. Since the outpouchings are usually large, they are recognized with comparative ease as the contrast meal makes its way through the jejunal coils. Frequently the diverticula fail to evacuate the contrast substance rapidly, and they are recognizable even after the jejunal lumen in the immediate vicinity has contracted and all but the smallest residue of the opaque substance has been expelled from the mucosal folds.

Ileum.—Diverticula are but rarely found in the ileum, and those not designated as Meckel's diverticula rarely are associated with clinical symptoms. The roentgenologic appearance of ileal diverticula is the same as that of diverticula in the duodenum and jejunum.

MECKEL'S DIVERTICULUM

This developmental anomaly occurs in about 2 per cent of the population, males predominating in a ratio of 2:1. It is always found somewhere in the first 5 feet (150 cm.) of ileum above the ileocecal valve. Almost any variation in size, shape and position may be encountered. Thus Dixon and Famiglietti [13] and Goldstein and Cragg [14] described a gigantic Meckel's diverticulum, 66 cm. in length, which was found in a girl aged 5 years. Often the diverticulum is simply a small, budlike projection from the ileal lumen.

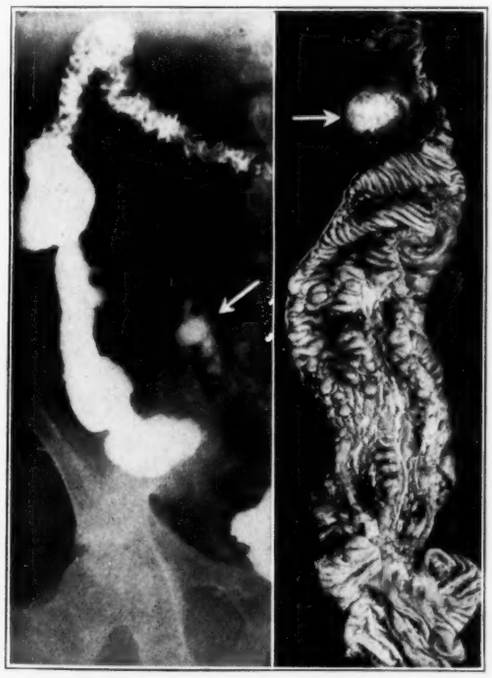

Fig. 7.—Meckel's diverticulum and hyperplastic ileitis. The arrows point to the diverticulum; left, in the roentgenogram made after evacuation of the contrast enema; right, in the specimen removed by resection.

Pemberton and Stalker,[15] reviewing twenty consecutive cases in which Meckel's diverticulum was encountered at operation, classified the cases into three groups: (1) those in which there were no symptoms, (2) those in which there were symptoms of intestinal obstruction and (3) those in which there were symptoms of intestinal bleeding. Only eight of the twenty patients had symptoms believed to be due to the diverticulum; in the remaining twelve cases the diverticulum was discovered at the time laparotomy was performed for some other abdominal lesion.

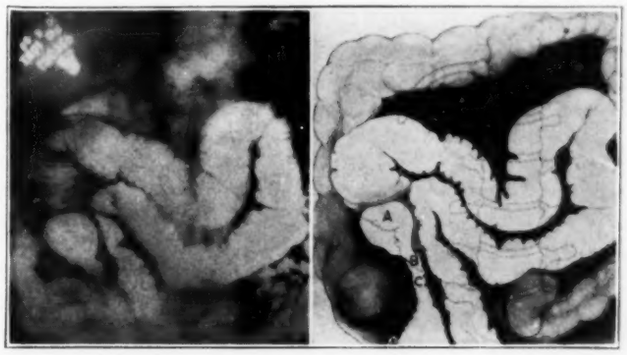

Fig. 8.—Meckel's diverticulum; left, lower part of the ileum filled with contrast suspension administered by mouth; right, diagrammatic representation of the condition found at operation: *A*, Meckel's diverticulum; *B*, neck of diverticulum; *C*, narrowed ileum.

The clinical diagnosis of Meckel's diverticulum, even when the diverticulum is diseased, is notoriously difficult. However, the condition can frequently be suspected and a presumptive diagnosis made on the basis of exclusion of other possibilities. The roentgenologic examination assists in the diagnosis of Meckel's diverticulum in two ways: (1) by the actual demonstration of the diverticulum somewhere in the lowermost 150 cm. of the ileum; (2) failing this, by assisting in the exclusion of other intestinal lesions as causes of symptoms.

Very few successful attempts at demonstrating Meckel's diverticulum by roentgenologic methods have been recorded. Case [16] was the first to demonstrate this anomaly, and many years elapsed before another instance was recorded in the roentgenologic literature. Then others, among them Pfahler,[17] Allemann [18] and Prévôt [19] reported cases. Up to the present time Meckel's diverticula have been demonstrated roentgenologically on but six occasions at the Mayo Clinic. Since these diverticula vary so widely in their gross morphologic characteristics, a typical roentgenologic appearance is not to be described. The roentgenologic appearance may, however, be expected to reflect the morphologic contour of the particular diverticulum. A review of the cases seen at the Mayo Clinic and those reported in the literature shows that Meckel's diverticulum will usually be found in those coils of the lower part of the ileum that are situated near and somewhat to the right of the midline and at or near the level of the umbilicus. One of the six cases seen at the clinic was reported by Skinner and Walters,[20] and the preoperative roentgenologic diagnosis of Meckel's diverticulum (fig. 5 *a* and *b*) was confirmed at operation. In three cases in which the diagnosis was made, the

13. Dixon, C. F., and Famiglietti, E. V.: Gigantic Meckel's Diverticulum with Ulceration Producing Massive Hemorrhage: Report of Case, Proc. Staff Meet., Mayo Clin. **12:** 545-547 (Sept. 1) 1937.
14. Goldstein, Moe, and Cragg, R. W.: An Elongated Meckel's Diverticulum in a Child, Am. J. Dis. Child. **55:** 128-134 (Jan.) 1938.
15. Pemberton, J. deJ., and Stalker, L. K.: Meckel's Diverticulum: A Review of Twenty Cases with Report of Two Cases, Surgery **3:** 563-567 (April) 1938.
16. Case, J. T.: Jejuno-Ileal Diverticula, Acta radiol. **6:** 230-240, 1926.
17. Pfahler, G. E.: The Roentgenologic Diagnosis of Meckel's Diverticulum, Surg., Gynec. & Obst. **59:** 929-934 (Dec.) 1934.
18. Allemann, R.: Zur Diagnose und Therapie des chronisch-intermittierenden subtotalen Ileus, Schweiz. med. Wchnschr. **64:** 331-333 (April 14) 1934.
19. Prévôt, R.: Meckelsches Divertikel im Röntgenbild, Röntgenpraxis **8:** 397, 1936.
20. Skinner, I. C., and Walters, Waltman: Leiomyosarcoma of Meckel's Diverticulum, with Roentgenologic Demonstration of the Diverticulum: Report of a Case, Proc. Staff Meet., Mayo Clin. **14:** 102-107 (Feb. 15) 1939.

patients were not submitted to operation and hence the diagnosis has not been confirmed (fig. 6). One patient had extensive hyperplastic ileitis, which was recognized roentgenologically. The diverticulum was discovered in the resected portion of the intestine and a review of the roentgenograms after operation revealed the site of the diverticulum and its contours accurately (fig. 7). In the fifth case a preoperative diagnosis of perforating obstructing neoplasm of the ileum was made (fig. 8). At the primary operation the real nature of the lesion was not determined with certainty, but it seemed to be a narrow, annular tumor of the ileum associated with marked inflammation. Ileocolostomy was performed. At the second operation, which was performed twenty-five days later, it was found the inflammatory process had subsided, and the real nature of the lesion became apparent. It was a Meckel's diverticulum 3.5 cm. in diameter at its base and 7.5 cm. long; the anterior portion had become ulcerated. There was also considerable inflammation of the ileum on each side of the diverticulum. A review of the roentgenograms in the light of these surgical observations revealed that the true morphology was readily apparent but misinterpreted preoperatively.

As roentgenologic experience with the diagnosis of Meckel's diverticula accumulates, it seems reasonable to expect that the condition will be recognized more frequently at roentgenologic examination. Such Meckel's diverticula, however, as are small and communicate with the ileal lumen by a very wide neck will be recognized only with the greatest difficulty, and many of them will inevitably escape roentgenologic detection. Careful and painstaking examination of that part of the ileum in which this anomaly occurs will, I think, result in many more accurate diagnoses of this condition than have been recorded in the past.

EXTRINSIC PROCESSES

The small intestine seems to be co-involved by pathologic processes extrinsic to it with relatively greater frequency than is the large intestine. Usually such processes are neoplasms which deform the small intestine segmentally either by direct extension and invasion or by producing trophic ulceration which extends into the lumen. Neoplasms of the pancreas seem especially prone to do this, but tumors of the mesentery and of the female pelvic organs may act similarly. Of the extra-enteral non-neoplastic processes which extend to and involve the small intestine, perforating diverticulitis of the sigmoid colon and salpingo-oophoritis seem to be encountered most frequently. The roentgenologic evidence of the extrinsic nature of the process is obtainable at the roentgenoscopic examination, if at all; palpation will possibly reveal the extrinsic mass or a more diffuse tenderness or muscular rigidity than would be expected if the disease were confined to the intestine. If actual perforation into the intestinal lumen has not taken place, considerable deformity of the affected segment may be observed, yet as the mucosal surface is carefully examined it will be noted that the mucosal pattern, although altered considerably by functional changes and by edema and submucous infiltration, will be left unbroken throughout the deformed segment. Conditions of this kind, however, may be very confusing and will often demand fullest cooperation of all special diagnostic services if the correct diagnosis is to be made preoperatively. Fortunately, situations of this kind are not commonly encountered.

CLINICAL ASPECTS OF CHRONIC DISORDERS OF THE SMALL INTESTINE

EVERETT D. KIEFER, M.D.
BOSTON

This study has been restricted to the role of the small intestine in the etiology of chronic abdominal disorders and to the considerations that must be given it in the diagnosis of chronic digestive complaints.

Clinical signs and symptoms of disorders of the small intestine arise as a result of interference with the physiologic functions of digestion, absorption and motility.

SYMPTOMATOLOGY OF DISEASE OF SMALL INTESTINE

There are few symptoms which are highly diagnostic of disease of the small intestine. Obstructive lesions may cause vague prodromal symptoms such as a sense of fulness or cramplike pain after meals, but the almost completely fluid nature of the content of the small intestine makes for an "all or none" type of obstruction. There is no obstruction until suddenly there is complete obstruction with an acute onset of symptoms that are either persistent or intermittent, depending on the mechanical status of the point involved.

Fig. 1 (case 1).—Appearance of the abdomen during an acute attack of intermittent intestinal obstruction caused by postoperative adhesions. Barium series during symptom-free intervals were negative. The large gas bubble in the left upper quadrant is in a dilated loop of jejunum.

Hypermotility of the small intestine produces symptoms that are less dramatic and more subtle in character. Abdominal distress immediately after meals, flatulence and diarrhea are suggestive of hypermotility. Grossly inadequate absorption results in large, foul, fatty stools, failing nutrition, calcium imbalance and avitaminosis.

Anemia is not uncommon in disorders of the small intestine and is the result of inadequate absorption of

From the Department of Gastro-Enterology, the Lahey Clinic.

Read before the joint meeting of the Section on Gastro-Enterology and Proctology and the Section on Radiology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

iron or other blood forming substance or more commonly the result of chronic blood loss. Gross hemorrhage also occurs and the passage of a large amount of red blood by rectum points to a possible lesion in the jejunum or ileum.

Fig. 2 (case 2).—Partial obstruction and marked dilatation of the jejunum caused by adhesions and a malfunctioning gastro-enterostomy from torsion of the jejunal loop, five hours after the ingestion of barium sulfate.

PHYSICAL SIGNS

The general physical signs of disease of the small intestine are malnutrition, anemia and signs of vitamin deficiency. Inspection of the abdomen may disclose an

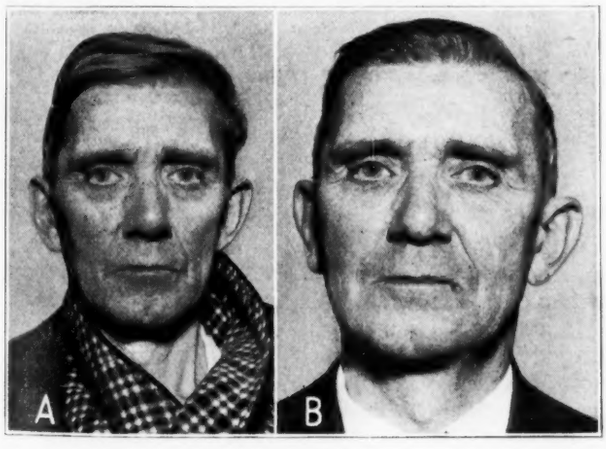

Fig. 3 (case 2).—*A*, appearance of patient Jan. 14, 1938, showing the malnutrition and the mental apathy which were present. Weight, 104 pounds (47 Kg.). *B*, appearance May 19 showing the striking change in his appearance after surgical relief of the obstruction and the associated improvement in his nutrition. Weight, 144 pounds (65 Kg.).

irregular pattern of dilated small intestine with or without visible peristalsis. If the abdominal wall is thin, it is usually possible to distinguish distended loops of small intestine from the stomach or the colon by the characteristic pattern and the type of peristaltic activity.

The other important abdominal finding may be a mass. Benign and malignant neoplasms of the jejunum or ileum vary in size, feel rounded and are usually movable and somewhat tender. An intussuscepted mass is firm but soft and gives the impression of being elongated or sausage shaped. Infectious granulomas may also be elongated but are harder and more ropelike.

ROENTGENOLOGIC SIGNS

By far the most important single laboratory procedure is the x-ray examination of the gastrointestinal tract, yet a remarkably large percentage of lesions of the small intestine are missed in the ordinary routine study. Although the study of motility of the small intestine, outline and mucosal pattern with serial films is well known and the interpretation well appreciated by specialists in roentgenology, these methods are not generally applied in gastrointestinal diagnosis, and the small intestine remains the relative blind spot in x-ray

Fig. 4 (case 3).—Rigid annular constriction with a sharp line of demarcation between rigid bowel wall and distended intestine, three hours after the ingestion of barium sulfate. Diagnosis, annular carcinoma of the jejunum.

diagnosis of the digestive tract. There follows the axiom that lesions of the small intestine are not found unless they are looked for.

There are practical objections, especially the cost of films, to the routine employment of numerous serial films in every case, and a compromise may be effected in the form of a film taken between two and three hours after the barium meal. Since, in the average case, the head of the meal reaches the cecum at this time, a considerable portion of the jejunum and ileum is well outlined and the film has much more diagnostic value than the ordinary six hour film. The examiner should be familiar with the clinical history and alert for symptoms pointing to the small intestine so that additional films can be ordered in suspicious cases. The rather wide variations in the normal mucosal patterns and outlines of the small intestine introduce difficulties in interpretation, but long experience in viewing normal patterns sensitizes the examiner to the occasional abnormal appearing loop.

Intubation of the small intestine combined with x-ray studies with air and opaque mediums recently described by Miller, Abbott and Johnston[1] promises to add further diagnostic aid.

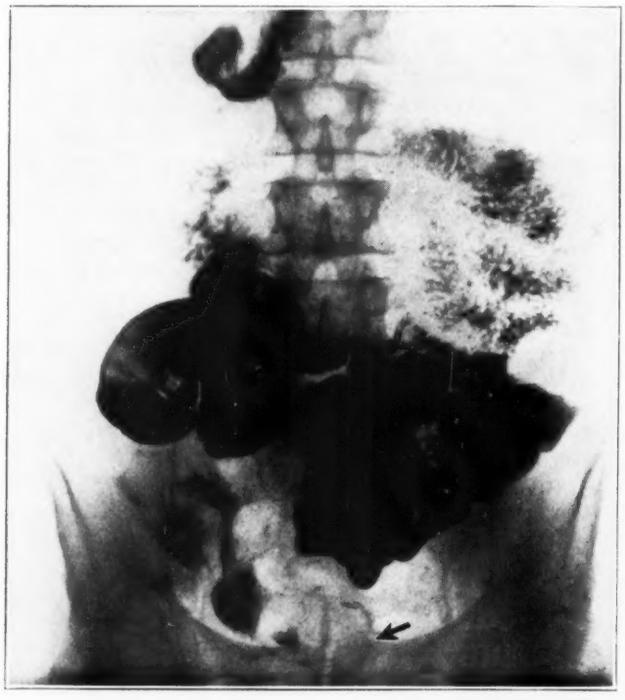

Fig. 5 (case 5).—Stasis and dilatation of the ileum and a rounded filling defect within the lumen of the ileum produced by intussusception, three hours after a barium sulfate meal.

CHRONIC OBSTRUCTION DUE TO ADHESIONS

One of the commonest forms of chronic organic disorders of the small intestine is the intermittent obstruction caused by postoperative adhesions.

In case 1 there was a history of a panhysterectomy and appendectomy performed fourteen years before

Fig. 6 (case 6).—Abnormal x-ray appearance of the jejunum characterized by exaggerated markings and sharply serrated borders. The ileum is smooth and dilated with spastic areas. Diagnosis, chronic nonulcerative enteritis.

admission. About nine years later the patient began to have attacks of severe, cramplike pain in the lower part of the abdomen, occurring at intervals of from one to twelve weeks, lasting several hours and sometimes accompanied by vomiting. Between attacks she had no important gastrointestinal symptoms. Characteristic of this condition, not only her physical examination but the gastrointestinal x-ray films were entirely negative during these intervals. Fortunately, while the patient was under observation she experienced a typical attack, which made it possible to make an x-ray examination of the abdomen during an attack (a diagnostic opportunity which should never be overlooked) (fig. 1). This disclosed a dilated, gas-filled loop of small intestine indicating obstruction, which was confirmed at laparotomy.

In association with chronic partial obstruction there is not only a disturbance of motility but sometimes a marked disorder of nutrition due to fear of eating

Fig. 7.—The normal small intestine may show considerable variation in position, caliber, outline and mucosal pattern. This film shows one of the common variations in the outline and mucosal pattern of the small intestine.

because of the resulting pain, frequent vomiting and diarrhea. Mild states of malnutrition and vitamin deficiency are common, and occasionally an extreme avitaminosis develops comparable to severe pellagra.

In case 2 a gastro-enterostomy had been performed for pyloric obstruction thirty-five years before admission. Until five years before the patient came to the clinic he had been well, but at that time he began to reduce his food intake gradually because of the abdominal pain that followed meals of ordinary size. His chief complaints on admission were neuritis in both legs and diarrhea. The physical manifestations were those of severe pellagra including emaciation, anemia, edema, polyneuritis, glossitis, dermatitis, proctitis and mental changes. Parenteral fluids and energetic vitamin therapy improved his condition, but an increase in the quantity of food resulted in obstructive vomiting. X-ray studies (fig. 2) showed obstruction of the proximal jejunal loop at the gastro-enterostomy, which proved to be due to adhesions and torsion of the loop. Surgical relief

1. Abbott, W. O., and Johnston, C. G.: Intubation Studies of the Human Small Intestine: X. A Nonsurgical Method of Treating, Localizing and Diagnosing the Nature of Obstructive Lesions, Surg., Gynec. & Obst. **66**: 691-697 (April) 1938.

resulted in the patient's return to health. Figure 3 reveals the striking improvement in the patient's appearance. The nutritional disturbances had become so marked that in the clinical picture they overshadowed the gastrointestinal disorder responsible for the condition.

TUMORS OF THE SMALL INTESTINE

Benign and malignant tumors of the small intestine may cause obstruction which is progressive but may be steady or intermittent. An annular carcinoma of the small intestine characteristically tends to give rise to slowly progressive obstruction with increasing pain and vomiting. The loss of weight in this type of case is usually marked and rapid. The stools contain occult blood and there is anemia as a rule. Figure 4 demonstrates a typical annular, constricting filling defect of a carcinoma in the jejunum with dilatation and stasis above it. Surgical resection in this case was followed by recovery, and the patient is alive seven years after the operation.

New growths of the small intestine which are not annular in structure but are mural or polypoid in type are the most frequent cause of intussusception in the adult and are prone to cause intermittent attacks of obstruction similar to the attacks associated with postoperative adhesions. The attacks tend to become progressively more frequent and more severe. As in the cases of chronic adhesions, the x-ray examination may be disappointing except when carried out either during or immediately after an acute attack.

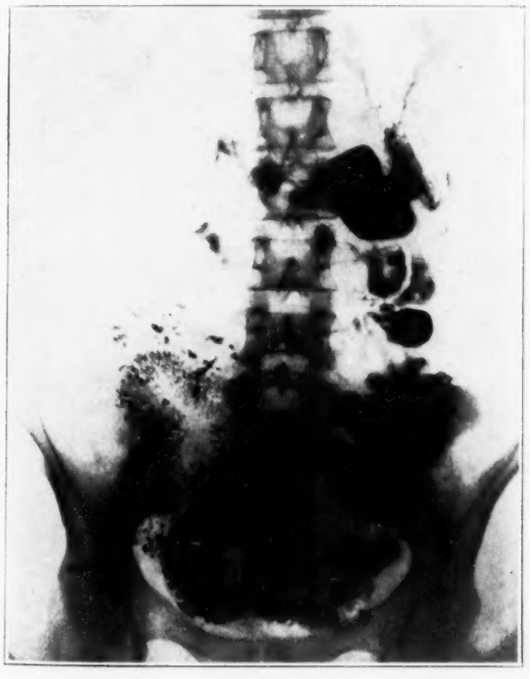

Fig. 8 (case 7).—Distortion of the outline and mucosal pattern of the duodenum beginning in the second portion with extension of the process into the jejunum producing changes in the outline and mucosa. The process extends well down into the jejunum, but the lower part of the jejunum is almost normal in the mucosal pattern, indicating that the inflammation was limited to the duodenum and upper part of the jejunum. Diagnosis, ulcerative enteritis.

DIVERTICULA OF THE SMALL INTESTINE

Meckel's diverticulum is another important cause of intussusception in young adults. The mechanism is probably identical, since in most cases there is in relation to the diverticulum either an inflammatory mass or a small benign tumor.

Occasionally it is possible to demonstrate an intussusception of the ileum by x-ray examination, as illustrated by the following case: A man aged 34 had intermittent spells of cramplike, midabdominal pain for over a year. Films of the small intestine showed not only disturbed motility but the presence of gas and barium, which outlined the filling defect caused by the tumor of intussuscepted bowel (fig. 5).

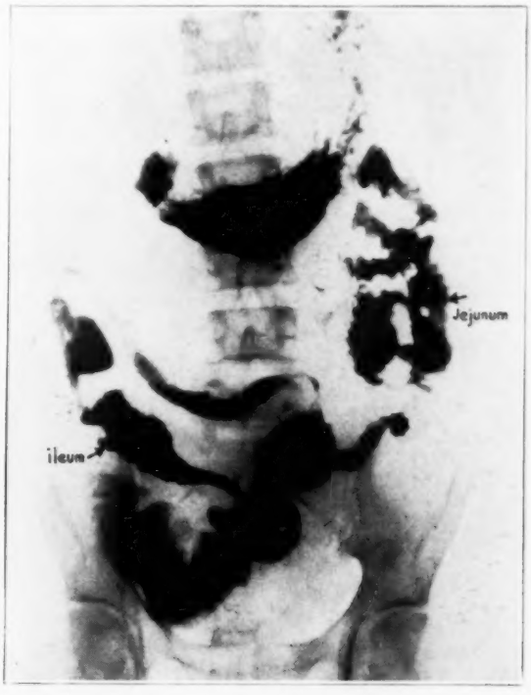

Fig. 9 (case 8).—Changes in the outline and pattern of the mucosa of the upper part of the jejunum one hour after the ingestion of barium sulfate. The lower part of the jejunum and the upper part of the ileum show contraction and rigidity over an extensive area. Dilatation and sacculation of the lower part of the ileum are present. Diagnosis, chronic ulcerative and cicatricial enteritis.

Also in cases of bleeding from the lower portion of the intestine, particularly in children and young adults, Meckel's diverticulum should be considered, since the occurrence of aberrant gastric mucosa within the sac giving rise to peptic ulceration, hemorrhage and perforation is a well known clinical entity.

CHRONIC INFLAMMATORY DISEASE

Our knowledge of chronic inflammatory disease of the small intestine other than tuberculosis dates mainly from the report of Crohn [2] in 1932.

SUBACUTE OR CHRONIC NONULCERATIVE ENTERITIS

A subacute or chronic nonulcerative inflammation of the small intestine is frequently seen and is illustrated by a school boy aged 15 who had complained of malaise, anorexia, mild abdominal distress, mild diarrhea, a slight elevation of temperature and moderate leukocytosis for three months. The colon was normal by x-ray and by sigmoidoscopic examination, but definite changes in the mucosal pattern of the small intestine were demonstrated (fig. 6). There was no blood in the stools. Following treatment the symptoms disappeared and subsequent x-ray films showed a return to normal of the pattern of the small intestine.

CHRONIC ULCERATIVE ENTERITIS

The following case of chronic ulcerative enteritis is an example of a more severe and more chronic form of active inflammatory disease of the small intestine showing evidence of ulceration of the mucosa but with-

2. Crohn, B. B.; Ginzburg, Leon, and Oppenheimer, G. D.: Regional Ileitis, J. A. M. A. **99:** 1323-1329 (Oct. 15) 1932.

out extensive hyperplastic reaction: A married woman aged 31 had complained of chronic abdominal pain for eighteen months. On examination she was found to have fever, a moderately severe anemia, mild leukocytosis and occult blood in the stools. Gastrointestinal

Fig. 10 (case 9).—Changes in the mucosal pattern of the jejunum and markedly irregular coils of ileum with numerous crater-like depressions in the outline one hour after the ingestion of barium sulfate. Diagnosis, chronic regional ulcerative and cicatricial ileitis.

x-ray examinations showed changes in the mucosal pattern, irregularities in outline and in caliber and some loss of flexibility in certain areas of the upper portion of the small intestine. The rest of the tract was normal (fig. 8).

HYPERPLASTIC STAGE

The hyperplastic stage is more chronic and may show surprisingly extensive involvement of the small bowel. The case illustrated in figure 9 shows x-ray changes throughout the small intestine which are highly reminiscent of the changes found in the colon in extensive ulcerative colitis.

From a roentgenologic point of view, chronic ulcerative enteritis of either the small or the large bowel produces obliteration of normal outlines, loss of flexibility, shortening of loops, stenosis and contraction of the lumen and occasional fistula formation.

TUBERCULOUS ENTERITIS

Tuberculous enterocolitis produces changes in the ileum and proximal colon which, from a roentgenologic standpoint, are indistinguishable from nonspecific enteritis. Brown and Sampson [3] pointed out that localized hyperirritability of the intestine was indicative of early ulcerative lesions in the mucosa. As the process advances, changes in the mucosal pattern, irregularities of outline and lumen and finally rigidity and narrowing are demonstrable by x-ray examination. Since it is generally accepted that ileocecal tuberculosis practically never occurs except secondarily to active, open pulmonary disease, the differential diagnosis is not a common problem.

3. Brown, Lawrason, and Sampson, H. L.: Intestinal Tuberculosis, Philadelphia, Lea & Febiger, 1926.

INTESTINAL CHANGES IN DEFICIENCY STATES

While malnutrition and deficiency states are common results of organic disease of the small intestine, it is also true that avitaminosis may lead to secondary changes in the intestinal tract which are sufficiently definite to be demonstrated by x-ray study. Irregular distortions of the normal mucosal pattern, localized dilatation of the lumen and a tendency for the barium sulfate to form pockets in isolated loops are noted. These changes are thought to be produced by edema of the mucosa, disturbances in the motor activity and loss of tone in the intestinal muscle.

Figure 12 shows an example of small intestinal atony found in a young woman with chronic malnutrition.

FUNCTIONAL DISORDERS OF SMALL INTESTINE

Purely functional disorders of the small intestine are difficult to establish on a sound clinical and laboratory basis. Nevertheless, experience with functional indigestion leads to the belief that in some cases disturbances of the small intestine play a prominent role. This disorder is usually manifested by signs and symptoms of hypermotility.

In some cases of hypermotility of the small intestine the barium sulfate meal may reach the cecum in less than one hour, and the entire meal may pass into the colon in three or four hours. A sense of extreme fulness in the upper part of the abdomen immediately after a meal is rather characteristic of distress of the small intestine. An unusual amount of borborygmi and a sensation of motion and gnawing within the upper part of the abdomen noticed immediately after a meal is also

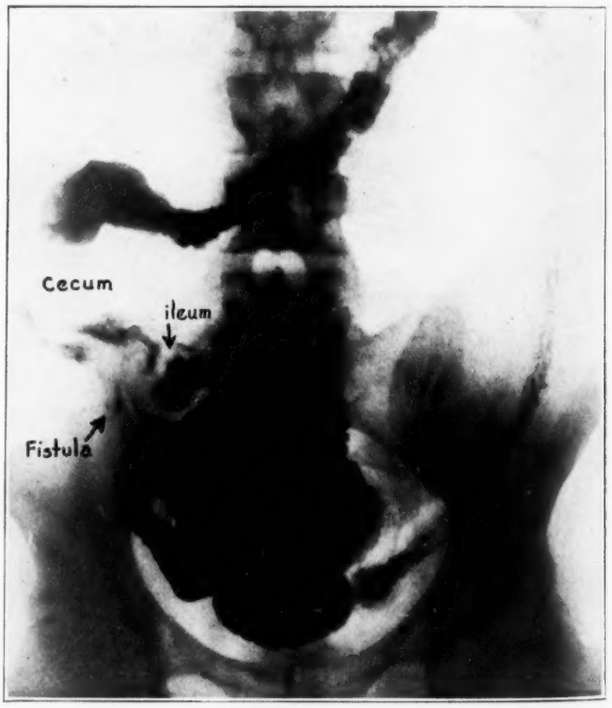

Fig. 11.—Contracted irregular lumen with loss of flexibility and sinus formation. Diagnosis, tuberculous granuloma of ileocecal region.

indicative of hypermotility. Rapid emptying of the small intestine may cause diarrhea and excessive flatulence.

Factors that are important in causing functional disorders of the small intestine are an irritating type of diet, habitual catharsis, alcohol, food idiosyncrasies or allergic phenomena, endocrine disorders, general fatigue and nervous or emotional factors. The excessive use of

cathartics is commonly associated clinically with disorders of the large bowel, but it is also true that cathartics have a pronounced effect on the small intestine. Patients with true food idiosyncrasies usually have a pronounced effect within a few minutes after ingesting the specific foods, and their symptoms often indicate a marked irritation of the small intestine.

SUMMARY

Chronic intermittent obstruction, most commonly caused by adhesions, is characterized by acute attacks of abdominal pain interspersed with asymptomatic periods with negative physical and x-ray manifestations. Positive diagnosis is often made possible by roentgenograms taken during an attack.

In some cases nutritional disturbances may be the outstanding feature.

Annular tumors produce gradually increasing obstruction.

Mural and polypoid tumors cause intermittent attacks of intussusception which increase in severity and frequency.

Except for Meckel's diverticulum, diverticula are usually asymptomatic.

Tuberculous enteritis usually secondary to pulmonary tuberculosis rarely involves the ileum alone.

Chronic nonspecific enteritis may occur as a febrile condition with irritation of the small bowel, as an ulcerative enteritis with fever and anemia or as a granulomatous condition with thickening, obstruction and fistulas.

Functional disturbances are manifested by signs and symptoms of hypermotility.

X-ray diagnosis depends on signs of disturbed motility and changes in the outline, caliber, flexibility and mucosal patterns as illustrated by films taken at suitable intervals after a barium sulfate meal.

Fig. 12 (case 9).—Rapid filling of the small intestine and the dilated atonic appearance present throughout the jejunum and ileum one and a half hours after the ingestion of barium sulfate. Diagnosis, atony of intestine; malnutrition.

605 Commonwealth Avenue.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. CHAMBERLIN, WEBER AND KIEFER

DR. SARA M. JORDAN, Boston: The first striking thing which comes to attention is the need for more complete x-ray examination of the small intestine. We probably cannot, in all cases, do what Dr. Chamberlin and Dr. Weber so adequately outlined, but we can follow their example and use the fluoroscope at frequent intervals and take frequent films and use either their technic or a standard technic in each laboratory, so that we have something on which to base our judgment of the condition of the small bowel, and this especially in those cases in which there is any reasonable suspicion of disease in the small intestine. We can also adopt what Dr. Kiefer has shown to be a satisfactory routine method of making some estimate of the motility of the small intestine, by a film taken in two or three hours, in addition to one taken after the jejunum and ileum have been almost completely emptied. That simple addition to the routine procedure will help us in the acquisition of more knowledge of the small intestine. We do not have endoscopy for the small intestine, but we shall use, I am sure, the Osler-Abbott intubation. Peritoneoscopy, which Dr. Benedict has described, will also help in visualizing parts of the exterior of the small intestine. We are constantly going to have more and more help, but we shall still depend mostly on increased facilities and increased skill in the visualization of the small intestine through roentgenology. The second point which has been important in this group of papers is that we need constantly more and more security in our diagnosis of functional disease of the digestive tract. In the past when we have eliminated disease of the stomach, biliary tract and colon and have found no gross obstruction in the small intestine, we have said that the patient who complains of abdominal symptoms is probably neurotic. It is an age-old difficulty of internal medicine to separate the sheep from the goats, the neurotic from those with real organic disease. This new knowledge that we are finding of the small intestine will help do that. We shall be able to determine in addition to the functional disease of the colon and of the stomach, of which we have talked so much, definite indications of functional disease of the small intestine and probably in more cases we shall be able to find real organic disease. I should like to stress the fact which was emphasized by Dr. Weber, namely that repeated examinations are important.

DR. ROSS GOLDEN, New York: For years we complacently did our examinations of the stomach, the duodenum and the colon and didn't bother to look at the loops of small intestine which happened to be filled at the time of examination. At Presbyterian Hospital in New York we began to do a special examination of the small intestine ten years ago. The clinicians soon became convinced of its value and it has become a standard, frequently requested procedure. Our technic differs from that of Dr. Weber in that we use a smaller quantity of barium sulfate; namely, 2 ounces (60 Gm.) with the necessary water to enable a patient to take it. The smaller quantity is advisable because there is less danger of one loop obscuring another and, furthermore, we withhold food for at least five hours unless the barium reaches the cecum in a shorter time. There are three important indications for a special, small intestine which might be mentioned: (1) diarrhea, (2) bleeding and (3) persistent abdominal pain remaining unexplained after adequate examinations of the stomach and duodenum or of the large intestine have been done. This deficiency state is of unusual interest. The manifestations on the x-ray examinations are not specific. There are a number of different conditions which may produce those changes. Vitamin deficiency is probably the most important. The Abbott tube has been used at Presbyterian Hospital in from sixty to seventy cases. As a result the mortality in intestinal obstruction has been reduced to 7 per cent. We believe that the development of this tube is of major importance. Not only does it change the surgical operation from an emergency to an elective procedure but also it enables diagnoses to be made which would be extremely difficult any other way. I have never seen the

giving of barium sulfate produce any deleterious effects in the presence of disease of the small intestine. I should like to second what Dr. Kiefer said about the importance of examining the small intestine during an attack. Not infrequently I request the clinician to let us do the examination during an attack. I should like, furthermore, to emphasize Dr. Weber's remarks about the use of spot films with or without compression, particularly with compression. We have been able to show things in that way which would be very difficult to demonstrate by other methods, particularly in the terminal ileum. One interesting fact which came out in a study of the autopsy protocols of primary malignant disease of the intestine in our department of pathology was the frequency with which metastases in other parts of the gastrointestinal tract occur with carcinoma of the small intestine.

DR. W. EDWARD CHAMBERLAIN, Philadelphia: I too have found it necessary to examine the patient during the attack in order not to miss the diagnosis. In one case it took a third laparotomy to discover the lesion, which would have been missed the third time had it not been for the fact that the patient entered an attack while on the way to the operating room. There is one observation which I feel I should record here under the heading of motility changes of the intestinal tract. There is a type of human being who is subject to exaggerated constipation without abdominal distention and with relatively few symptoms until catharsis is indulged in. The bowel movements are markedly inspissated. That type of individual has invariably exhibited a strange hypermotility of the upper intestinal tract; in fact, in a number of cases repeatedly examined I have found that the head of the barium column is in the descending colon in approximately one hour from the time it passes the mouth. That is a definite hypermotility of the stomach, the small intestine and the colon, yet it occurs in individuals who will go perhaps seven or eight days, after the one hour of hypermotility, before they will discharge some of that barium from the rectum. I want to emphasize what Dr. Golden has said about the tremendous value of the Miller-Abbott tube in intestinal obstruction. We too have found our patients made comfortable. We are able to feed them and give them water and prepare them for operation in a perfectly spectacular way. We owe a great debt to those who created the Miller-Abbott tube and taught us how to examine the small intestine with x-rays.

DR. T. L. ALTHAUSEN, San Francisco: There are two points I should like to make in connection with the subject presented here this afternoon. One is to mention a method to prevent the excessive spread of barium through the small intestine during fluoroscopic examination, which is in use by the radiologists of the University of California Hospital and has not been mentioned today. It consists of passing a tube into the duodenum and injecting the desired amount of barium mixture through the tube. With this method the usual successive passages of barium through the pylorus are absent, resulting in more satisfactory examination of the small intestine. Even marked hypermotility of the intestine does not necessarily impair intestinal absorption. We unexpectedly found this in studying intestinal absorption by a test the description of which will appear shortly in the *American Journal of Digestive Diseases*. With this test, four of five patients in whom the head of the barium column at the six hour examination of a gastrointestinal series was seen at the splenic flexure of the colon or distal to it proved to have normal intestinal absorption.

DR. JOHN T. MURPHY, Toledo, Ohio: A number of the authors and discussers have used the term "spot" film and, as the men at this meeting are not all radiologists, I feel that it would be well to inject a word of caution about this procedure. When "spot" films are made at the fluoroscope, it is necessary to "step" up the current so that the film may get an adequate exposure in a short time. This produces a marked increase in both the direct and the secondary radiation. Repeated too frequently, this exposure may cause harmful effects on the personnel in the fluoroscopic room.

DR. GEORGE W. CHAMBERLIN, Philadelphia: In the cases in which I have used a water barium meal I have found normal motility to be an hour and a half to three hours from the stomach to the cecum, and the small intestine is completely empty in from five to seven hours. There are some patients who show variations in the normal motility. In some instances in which the motility is unusually rapid, we have considered the possibility of allergy. Dr. Jordan mentioned the functional disturbances of the small intestine. This is the field that I have been particularly interested in and one of the reasons why I have urged every one to recognize a normal appearance of the roentgen pattern in the small intestine. There is evidence that such conditions as hypothyroidism and hyperthyroidism, adenomas of the pituitary, disturbances in the chemistry of the blood and other conditions outside the abdomen may produce an abnormal roentgen appearance of the small intestine. I should like to disillusion those of you who are gastroenterologists concerning what Dr. Kiefer said about the cost of the examination, particularly about the cost of the film. In our department we feel that the film is the least expensive part of the roentgen examination. In other words, adequate fluoroscopic and radiographic examination of the small intestine is possible if the radiologist will take the time to do a complete examination.

DR. HARRY M. WEBER, Rochester, Minn.: Meeting as we are with the Section on Gastro-Enterology and Proctology with whom our professional associations are very intimate, I think that they should have the assurance of the members of the Section on Radiology that we are continuing to lend our best efforts to what Dr. Jordan has aptly called "separating the sheep from the goats." In other words, we consider it our first duty to separate that group of patients who have organic disease as the basis of their symptoms from a much larger group whose symptoms are to be explained in another way. It has been said that in the past this has not been done very efficiently in cases of disease of the small intestine. Discussions of this type, together with more diligent application of roentgenologic methods to the small intestine, will do much to make the management of diseases of this division of the alimentary tract more satisfactory. Dr. Chamberlin emphasized that it means a lot of hard work—hard work, of course, for the roentgenologic examiner, which means first of all more diligent and more frequent use of the roentgenoscopic method in this field. None of us today consider the examination of the stomach or the colon adequately done without roentgenoscopic examination. Why then should the small intestine, the most difficult of all divisions of the alimentary tract to examine roentgenologically, be exempted from this the most useful and illuminating of all roentgenologic maneuvers?

DR. DAVID ADLERSBERG, New York: We all welcome the fact that we are beginning to think in terms of the small intestine. In regard to the interesting work of Dr. Kiefer, it is also my feeling that many of the complaints after gastroenterostomy and resection are due to disturbances in the small intestine. Some of these cases resemble mild cases of pellagra and sprue. As to the remarks of Dr. Chamberlin, I am also interested in cases in which there are hypermotility of the small intestine and colonic hypomotility, and have felt that in some of these cases the latter may be considered a compensatory mechanism for the former.

Inherited Structural Defects.—Most apparent of the human "abnormalities," by their very nature, are those which affect external appearance or sensory functions. At circus sideshows you can see some of the more startling examples of "black" gene caprice—midgets, dwarfs with misshapen heads and bodies, Negro albinos, "India-rubber" men, etc. But for each one of these there are dozens of other surface or structural defects found in the everyday walks of life. In fact, it may be said that most persons have some inherited structural abnormality—if we include, as "abnormal," conditions that are unusual, but not necessarily harmful or defective. Going further, and taking into consideration "hidden" recessive genes which singly produce no effect, it is pretty certain that every one of us is carrying some one or another of these genes.—Scheinfeld, Amram: You and Heredity, New York, Frederick A. Stokes Company, 1939.

THE RESPONSIBILITY OF THE MEDICAL PROFESSION IN THE MOVEMENT FOR 'BIRTH CONTROL'

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NEW YORK

The avoidance of conception as a result of normal sexual intercourse has been made in recent years the subject of extensive scientific study as well as of propaganda movements directed largely by lay and, in part, by professional groups. The desirability of birth control in a limited medical sense has been extended into the realms of sociology, economics and eugenics, and as a result a considerable confusion of thought and purpose has been developed. The doctor, however, has been made to feel that his participation in the world-wide discussion is a minor one; he is accused of failing to keep in step with modern requirements and to be unwilling to support a movement of such paramount importance. Undoubtedly the medical profession has been hesitant to take an active part in a propaganda with which many of its members are out of sympathy, largely because of the hysteria and exaggeration which have accompanied its dissemination. However, it must be evident that the profession cannot refuse to recognize the firm conviction on the part of the public that procreation can, and perhaps should, be regulated.

As physicians, we should constitute an active and influential force by which this effort can be guided in the proper direction. How shall this be accomplished? Is it for the medical profession to propose means and methods or shall it all be left to chance? It should be possible to view the problem from its various angles and to formulate certain standards of thought and practice through which at least a partial solution of a difficult question may be reached. In other words, and speaking broadly, there is a sane as well as what may be termed an insane approach to a question which is agitating a great many people. Moreover it becomes necessary to define as nearly as we can the responsibility of the medical profession and what its part must be in the application of knowledge thus far available. This may not prove a simple task, but it is one which cannot well be evaded or shirked. Mere blind opposition will accomplish nothing and will only react to its detriment. It is essential therefore that in our discussion we consider the problem from its varying aspects: historical, social, economic, legal and medical. Full consideration of all these is necessary to a proper understanding of this complex situation. For the control of conception is not a simple matter if we reflect on its wider implications, some of which are already becoming evident, among them the effect on our population balance. It is essential therefore that not only the medical profession but the public at large be thoroughly informed on the subject and that reason take the place of hysteria and unreason.

EARLY EFFORTS

Man has attempted to control his procreative powers probably since the dawn of history, and the actual limitation of the family by direct means was sought as soon as civilization as such became manifest. It is interesting to read of the crude methods employed by primitive races and the survival of some of these up to the present by people supposedly of a higher degree of intelligence. A knowledge of the physiology of impregnation was and still is an unknown quantity to most, but it is of interest to note in many instances that the methods for avoiding it were fairly ingenious and successful and, if not, there was always at hand a resort to abortion or infanticide. Strangely enough, with all these efforts to avoid conception there went almost hand in hand a desire to relieve infertility in women by procedures quite as thoughtful as the reverse. The responsibility for undesired pregnancy was not invariably placed on the woman's shoulders, and we find that mutilating operations were practiced on men for the same purpose by various primitive people who were evidently aware of the function of the seminal fluid.

As civilization advanced, crude methods and mechanical devices became gradually displaced by more rational procedures but, from a careful reading of the history of contraception, it is evident that the desire for prevention is not a new thing; it is merely the search for and distribution of effective and harmless means of achieving this which characterizes the later day movement. However, during the nineteenth century we find a noteworthy departure. From a purely personal basis, contraception in the larger sense became involved with social and economic problems. Woman's emancipation, so called, has served to stimulate her self expression. She demands what she terms protection against undesired or too frequent child bearing, and this attitude has extended to all social levels; the underprivileged classes are no longer to be discriminated against.

BIRTH CONTROL IN ENGLAND

Himes [1] accords to Francis Place, an Englishman who lived from 1771 to 1854, the same position in social education on contraception that Malthus holds in the history of overpopulation theories. Malthus had approached the problem of birth control from an entirely different standpoint, for he believed that unchecked population growth in a country would in time overreach its available food supply. He recommended moral restraint and essentially condemned birth control as we know it today. Moral restraint did not imply restriction in intercourse within the married relationship but rather postponement of marriage until the contracting parties were able to support possible offspring. It is readily seen why the more radical ideas of Place and his successors developed a larger following. Place made a strenuous campaign in England in 1822 and the subsequent years, circulating handbills freely among the working classes, describing the use of a vaginal sponge or coitus interruptus as effectual contraceptive methods. Place and his followers, although including medical conditions, made a strong plea for their devices as factors in preventing poverty and raising the standard of living of the masses. Place also argued that birth control would favor earlier marriages and that postponement led to vice and prostitution. Place was not a physician and he was not supported by the medical profession but he frequently sought the advice of its members. He did introduce the organizational element into the control of contraception, which has developed into the prominent propaganda movement that we know today.

After the clamor for social reform died down in England, following the general readjustment after the Napoleonic period, interest in birth control likewise diminished but found a new field of activity in America, where the publication of several books by Richard Owen

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1. Himes, N. E.: Medical History of Contraception, Baltimore, Williams and Wilkins Company, 1936.

and Dr. Charles Knowlton, among others, served to revive the agitation. The latter recommended chiefly astringent douches after coitus, and his book "The Fruits of Philosophy" was widely sold in this country and in England.

During the last quarter of the nineteenth century, prosecution of several writers and publishers in England characterized the campaign for democratization of birth control knowledge by publicity. The Free Thought Movement of that period, under the dominance of Annie Besant, Bradlaugh and others, became involved in court procedures and in 1878, as the result of two jury trials, a sentence combining prison and fines was imposed on a Mr. Truelove, a book publisher of London. The public of England became intensely stirred, but the results of various appeals were unsuccessful, although the trials did aid finally in making legal the general free distribution of contraceptive knowledge. There seems to be little doubt, moreover, that the diffusion of birth control knowledge has reduced the English birth rate by half since 1876.

Mrs. Annie Besant brought out in 1884 a booklet entitled "Law of Population," which found general favor as shown by the fact that more than 175,000 copies were sold, the last edition appearing in 1897. Additional contraceptive devices, including the soluble suppository and the rubber cervical cap, were proposed. Another pamphlet, written however by a doctor, also appeared during this time and by 1927 its circulation had passed the half million mark. Its author, H. A. Allbutt, a Leeds physician and fellow of the Royal College of Physicians of Edinburgh, was accused in 1887 before the General Medical Council of having published an indecent book and his name was ordered taken from the Medical Register, mainly, it seems, because the author's conduct was considered unprofessional in permitting advertisements of contraceptives to be included. Appeals were unsuccessful as far as Allbutt was concerned, but his pamphlet continued to circulate widely.

Various individuals and organizations too numerous to mention have identified themselves with the birth control movement in England. Characteristic of more recent sentiment is the stress laid on birth control as a health and eugenics measure rather than as one solely dictated by economic status.

PROPAGANDA IN THE UNITED STATES

The birth control movement in the United States during the nineteenth century was associated rather closely with that in England. A number of physicians wrote similar books of advice and direction for married couples, but there developed likewise a good deal of quackery and also an association of the movement with certain erratic individuals who were active in a variety of religious and quasireligious cults and organizations. Liberal political thought, as expressed by socialists, communists and even anarchists, included birth control propaganda, and legal restrictions against the distribution of information and devices were incorporated in the laws dealing with obscenity and indecency in the federal Postal Code and in various state laws. An interesting social experiment of this time was the Oneida community of New York State, which existed for a period of years during the latter part of the nineteenth century. This was a voluntary communistic colony which was founded and led by John Humphrey Noyes and combined its peculiar religious doctrines of Perfectionism with a complex system of marriage in which control of conception was exercised by a peculiar type of coitus, a sort of male continence. This colony constituted an interesting eugenic experiment but, its essential principle being unphysiologic and contrary to what Himes terms "the sexual pattern of the male developed over a long physiological period," it did not long survive. Moreover, internal dissensions and the force of public opinion assisted the disintegration.

Others took up the birth control propaganda in this country and many books had wide circulation notwithstanding the many prosecutions brought about through the Comstock laws. These legal restrictions centered in certain postal regulations and curbed for a considerable period the dissemination of birth control information and devices. Of course all sorts of evasions were practiced, but in the course of time legitimate medical indications became more clearly recognized. Teachers of prominence in medical schools talked about and approved of contraceptive measures yet for many years did little to advance the scientific side of the subject. In the early part of this century the name and personality of Margaret Sanger became prominent through her dramatic efforts in circulating literature and opening clinics for contraceptive advice. She came into conflict with the law, and her persecution by the police served merely to draw greater attention to her self-assumed martyrdom. Her attitude toward the subject may be regarded perhaps as exaggerated and often hysterical, but her influence was undoubted and she succeeded by her strength of will and determination in interesting and enlisting many well meaning and wealthy women for the support of the American Birth Control League and allied organizations. Mrs. Sanger claimed that from the first she attempted to operate through the medical profession but the unwillingness of its members to assist her forced her to independent action.

COMMERCIAL EXPLOITATION

It has been claimed (Himes,[1] p. 326) that the failure of the medical profession to accept its responsibilities is the principal cause for the extensive commercial and antisocial participation in the contraceptive movement. There can be no question of the enormous and highly profitable traffic in preventives—good and bad—sold widely everywhere at the present time without apparent restraint. One must carefully divorce the legitimate from the illegitimate demands in arriving at a conclusion about what should be done to restrain sales and secure standardization of products.

There is one aspect of the problem to which insufficient attention has been given by the profession, namely its responsibility in the teaching and practice of birth control measures when these are indicated. The history of the movement shows however that, particularly in recent years, physicians have given thought to the matter of judging the efficacy of various methods of contraception and have instituted scientific studies to evaluate them. Medical indications have also been more closely defined. But it must be acknowledged that the stimulus has come largely from lay groups whose sense of direction and application has not, as a rule, been satisfactorily guided. For much of this the doctor, both in an individual and in a collective capacity, must assume the blame. It should not have been necessary to establish extramural clinics for this purpose; whatever advice and treatment were necessary could have been done in the established hospital clinic and doctors' offices. Moreover, the assumed illegality of contraceptive advice has, in my belief, had an unfortunate psychologic effect, and the confusion that exists in the minds of physicians likewise requires clarification.

It is questionable whether the imposition of statutes, either state or federal, can control a movement of this kind, in which concerted agitation, largely by interested lay groups, has too often distorted and magnified indications. Medical men have given their names in aid of efforts to do away with restrictive laws, so that a physician's right to prescribe as he saw fit would not be invaded. There can be no question about the paradoxical and absurd situation created by the retention of outmoded statutes, both federal and state, which have interfered with legitimate practice and contributed little to control the indiscriminate dissemination of contraceptive advice and products. The commercial exploitation that has resulted can be regarded only as disgraceful. In a recent magazine article the number of dollars involved is quoted in millions. An extensive and thriving business has been developed by a large number of manufacturers and distributors whose field of activity is by no means directed to those people legitimately entitled to employ their devices. The resultant advertising campaign has become nauseating and under the more acceptable and supposedly refined appellation of "feminine hygiene" an important and serious matter has become flouted for purposes of financial gain. We can thank the unrestrained popular propaganda for this, as we can for the lack of sexual restraint which has become so evident. There is a hope but, it must be admitted, a rather faint one, that through proper education and the possible help of the medical profession we may arrive at a more sane attitude toward this question.

THE COMMITTEE ON CONTRACEPTION

The American Medical Association long resisted efforts to give its official sanction to the study of contraception but finally, at a meeting of the House of Delegates held in Atlantic City in 1935, provided for a study committee, which has rendered two reports.[2] This action by organized medicine should be given careful consideration, and I want to review briefly the reports of the special committee which thoroughly discussed and studied the various claims that have been made concerning the need for contraceptive practices, as well as the accepted medical indications and the possible dangers associated with the widely disseminated propaganda. The committee approached the subject from various points of view, beginning with that dealing with overpopulation. This problem is very complicated and resolves itself today into a question of selected growth rather than a haphazard increase. If this means a wider acceptance of the need of contraceptive practice applied in particular to the unfit, using this term in a wide sense, the committee was hesitant to enter into an endorsement of such a movement because it felt that, as far as the United States or similar countries is concerned, we have as yet little to guide us in formulating a national policy on the subject. The committee also believed that it must limit its consideration of the question as it refers to the relationship of physician and patient. The committee called attention to the inadequacy or ineffectiveness of many contraceptive procedures and to the actual dangers of others. While clarification of laws is needed, there was no evidence that existing laws interfered with a physician who felt called on to give information to patients. The committee expressed its opposition to independent and unlicensed birth control clinics and suggested the need of instruction to medical students in the entire subject of fertility.

As for eugenic considerations, the committee concluded that there is little scientific basis to justify wider birth limitation except in the case of acknowledged transmissible congenital diseases. Moreover, there seems to be no evidence that a wider dissemination of contraceptive information would establish a better social and economic equilibrium in society. While family limitation among lower income groups might prove advantageous, the lack of adequate and effective methods makes this difficult, especially where the exercise of ordinary restraint is inapplicable.

Medical considerations naturally could be more appropriately discussed by a group of physicians and more definite conclusions could be presented. The committee recognized that voluntary limitation of conception may be necessary to safeguard the health of some women, as in the presence of active tuberculosis, nephritis, heart disease, certain psychopathic conditions, arteriosclerosis, chorea, pernicious anemia, a recent serious illness or operation and a number of other conditions, especially in women physically incapable.

A recommendation that a responsible group be authorized to develop standards for judging contraceptive materials was not endorsed until the year following the introduction of the first report, when it was referred to the appropriate councils of the Association. It was also reaffirmed that contraceptive information should be limited to physicians in their private practice and to regularly licensed clinics under medical supervision. This formal recognition of the subject by organized medicine constitutes an important step, but thus far no impression can be recorded on the status of the question as a whole. It will take years to curb and regulate a movement which has had such wide and appealing publicity.

RESULTS

I have attempted to review briefly the history of the birth control movement and its development in this country. While efforts to develop contraceptive practices are by no means new, the effects on our social structure have become more evident during recent decades, particularly the influence on birth rates and population balance. This influence cannot be disregarded, for we must face the fact that the birth rate of this country is diminishing and that the older age groups soon may dominate the younger. The former are outside of the productive and reproductive periods and it will take more time to determine the effect of such biologic interference on the economic and social status of a nation.

Much has been said about the influence of contraceptive practices and their free discussion on morals and a changing attitude toward parenthood and child bearing. This is a broad subject and its interest to the profession may be secondary, for undoubtedly the physician no longer occupies the position of adviser and family counselor which he did in the past. Nevertheless I feel that he has an important role to play, for it would have been well if he had chosen or had been chosen to carry out the practical application of a contraceptive program in a sane and reasonable manner. Organized medicine, speaking through its official body, has attempted to define this position but with what success remains to be seen. However, the individual physician may feel that he must be guided by conscience or religious precepts and it would be unwise in such instances to resort to persuasion in any effort to bring about a change of views. A considerable portion of the active practitioners of medicine acknowledge

2. Report on the Use of Roentgen Rays for Contraception, Council's Committee on Contraception, J. A M. A. **111**: 1767 (Nov. 5) 1938.

and believe that contraception is justified and plays a part in their professional duties. It would appear reasonable, therefore, to review the practical phases of contraceptive therapeutics, if I may so designate them. Before doing so it may be well to discuss briefly the religious aspects of the question.

THE "SAFE PERIOD"

Many religious bodies have condemned severally interference by artificial means with the process of insemination, particularly the Catholic church, and yet we find apparently a change of sentiment in recent years, since fairly definite knowledge is available about the so-called safe period. While one must approach the subject with caution, it is evident that no condemnation by church authorities attaches to the practice of this method of contraception by married people. Prominent Catholic clergymen and physicians have endorsed and written about the availability of the "safe period." This view assumes, of course, that the time of ovulation can be determined absolutely in all cases. Unprejudiced medical opinion is somewhat less certain. While ovulation in most cases occurs during the middle of the intermenstrual month, a variety of physical and emotional factors may advance or postpone menstruation and thus throw calculations out of balance. This uncertainty is of particular moment in cases in which pregnancy is contraindicated for definite medical reasons.

The so-called Ogino-Knaus theory has stimulated a vast amount of clinical and biologic investigation. Undoubtedly there are women in whom a "safe period" exists, but in actual practice the procedure demands a degree of restraint and cooperation which cannot be relied on to do what is so glibly claimed for it. How can such a method of self control be imposed on that large group of people who most need a foolproof method of either child spacing or contraception? Mathematical calculations based on menstrual dates are scarcely reliable or opportune in moments of sexual excitement. It places too much of a strain on human nature.

THE DOCTOR'S QUANDARY

The doctor, assailed by conflicting opinions, naturally is in a quandary when consulted by patients in the legitimate practice of his profession. He is well aware of the consequences of pregnancy when this is contraindicated medically or in certain instances socially. Whatever his principles, he may find it necessary to sacrifice these to expediency. He may in consequence be damned if he does and equally damned if he does not. There must be a middle ground on which the physician may stand which is legitimate and yet not contrary to the just demands of his patients. Therefore, what advice and suggestion can we accept as practitioners for the practical application of contraceptive knowledge now available?

Numerous technical manuals on contraception have been published for the use of physicians which offer a multitude of methods. It is well in each instance to study the individual patient and adopt the most suitable procedure to the case. Passing by what may be termed physiologic methods such as continence and coitus interruptus (withdrawal), the commonly employed methods may be divided into chemical and mechanical.

METHODS IN USE

The principal chemical methods include the medicated douche and a variety of jellies, suppositories and foam powders. The douche is effective mechanically to a certain degree and may be rendered spermicidal by the addition of soap suds, a variety of astringents (vinegar, alum and the like) or chemicals (mercury bichloride or saponated solution of cresol). The uncertainty of the former and the dangers of poisoning by the latter render this procedure undesirable in most instances. Jellies and pastes contain a variety of chemicals suspended in a water soluble vehicle to be injected by an appropriate device into the vaginal vault. Suppositories are solids melting at body heat, usually of gelatin or cocoa butter, incorporated with boric acid, chinosol, quinine or a similar drug. Foam tablets are stable in the absence of moisture and are made up of sodium bicarbonate and a solid acid such as tartaric or boric. They depend for their activity on producing a mechanical barrier at the cervical os, as well as on the spermicidal effect of the carbonic acid gas generated and the incorporated spermaticide. A variety of powders for vaginal insufflation have also been employed.

These procedures depend largely for their effectiveness on the occlusion of the cervical opening, and the jelly is perhaps the most suitable. On the whole, however, they do not prove as highly effective as the actual occlusive pessary or the condom. Vaginal barriers can be made out of soft absorbent materials such as wool tampons or sponges, saturated perhaps with vinegar or some chemical solution or made from rubber in the form of a cervical cap or a diaphragm. The latter, supplemented with a jelly, is generally regarded as the most effective device and is widely used in contraceptive clinics, where it serves as the basis for the mystery which it is claimed is freely accessible to the rich and denied to the poor. The occlusive pessary must be carefully fitted to be effective, and the necessary manipulations may prove offensive to some women, but evidently most of them have overcome any possible scruples.

The foregoing methods are limited to the woman and applied before each exposure. Prolonged protection has been sought in the form of a variety of intra-uterine devices as well as subjecting the ovaries or testes to irradiation. The injection of sperm to produce spermatoxins has also been made the subject of extended experiments. Intra-uterine stems and rings are mentioned merely to be condemned. Their dangers are so evident that they should never be employed, notwithstanding the claims made for them. The field for irradiation of the ovaries to produce either temporary or permanent sterility is too limited for general discussion and we have too little satisfactory or definite knowledge about spermatoxin to warrant its consideration in general practice.

METHOD USED BY THE MALE

The condom is perhaps the better known and more common contraceptive device for use by the male, and an enormous expansion of its manufacture and distribution has taken place in recent years in this country. Of its use and safety there can be but little question. However, popular contraceptive propaganda has been directed largely to the woman, who is made the responsible partner. I wonder whether the various agitator groups would have been so successful in their appeals for sympathy if the responsibility for taking contraceptive measures had been lodged primarily in the male?

Complete sterilization of either man or woman by ligating the seminal tubes or the oviducts is somewhat out of the province of this discussion, but there is a growing sentiment that vasectomy in particular should not be limited to the mentally defective.

The relative value of the various methods thus briefly outlined is based on their efficacy and comparative harm-

lessness. It is in this field that authoritative and unprejudiced information is needed, and we may hope that an official body, preferably medical, may in time promulgate the desired knowledge. Extended studies have been made by the special birth control organizations and others, but little has been made available to physicians through official publications. The choice of method depends on the particular indication and the particular patient and also on whether contraception shall be temporary or permanent. Certain medical indications are distinct and perhaps permanent, certain social indications may verge closely on the medical and perhaps be only temporary. I have already referred to the group of transmissible diseases. Fortunately they are not numerous and in many instances the pathologic condition itself may constitute a barrier to pregnancy. When organic disease is present, including disorders of the heart, lungs, kidneys or blood forming organs, a physician need not hesitate; but there is another group of cases in which merely a state of overfertility may come into the question.

Fertility among individuals varies greatly and is dependent on a number of factors. Frequent child bearing, aside from its social and economic aspects, may have a decidedly depleting and perhaps harmful effect on a woman's general health and well-being. No one would deny the desirability of properly spaced pregnancies or even a reasonable number of children in order to avoid the drain on a woman's physical resources, which have had added to them so many other demands in more recent years. We cannot measure today a mother's ability to bear children by the standards of the past or by the much heralded occasional large families so dramatically shown on the screen or the Sunday supplements of our daily papers. The economic value of large families to factory workers and farmers is doubtful in this present day and age, and changing social and housing conditions call for a changed point of view. Unfortunately we have gone back a little too far in the popular estimate of the size of the family which, as far as the number of children is concerned, has gradually drifted to a point where a population balance is no longer being maintained. The physician, however, is often drawn into the picture, and his advice is sought by harassed parents who may not have found their way to a convenient birth control clinic where no embarrassing questions are asked. What shall he do? If truly acquainted with the facts, he should not hesitate to take the steps necessary for the welfare of that particular patient, provided he knows what to do and how to do it. Continence seems to be out of the question as a remedial agent in most cases; he cannot control nature's urge and he would get little encouragement or cooperation if he attempted to do so.

It is difficult to make a rule for the proper spacing of children, but an interim period of not less than two years should prove a desirable physiologic reply to this question. This brings up the consideration of the problem of postponing the first pregnancy in a young married couple. The universal dissemination of the birth control propaganda has fixed quite firmly in the minds of many people that such postponement until a convenient or suitable time is a perfectly legitimate and proper desire for a variety of good, or at least apparently good, reasons. What with our already late marriages, this has increased the average age at which the first labor takes place with a consequent increase in possible abnormalities, including a demonstrable higher incidence of toxemia and operative intervention with its attendant morbidity and mortality. Undoubtedly a great many instances of sterility are covered up by the use of contraceptives which might have been discovered and treated at an earlier period. Moreover, the psychologic effect of avoiding pregnancy in the earlier years of married life is, in my belief, inherently unfortunate because it makes of this perfectly normal function an undesired complication, in many instances to be accepted finally if it cannot be avoided. It is true there may be extenuating circumstances in individual cases, but accepting contraception as a first stage in marriage is contrary to sense and to reason. It takes from possible parenthood that aspect of dignity and desirability which contributes much to connubial happiness.

MATERNAL MORTALITY

There is one further aspect to this problem to which I want to call attention. We have heard much in recent years about the high mortality associated with child bearing in the United States—that six women die out of every thousand who give birth to a living child. Ignorance, neglect and lack of proper and adequate care have been ascribed as causes, and constant efforts are being made by the medical profession and interested lay groups to reduce the preventable deaths, which are calculated as about one third or more of the total number. Is it possible that a knowledge of these facts has made women fearful of pregnancy and thus stimulated a demand for contraceptive measures? And in this connection we must likewise think of the many abortions with their high toll of death. If one half of the women who died from preventable causes and a like number of babies who were stillborn or who were lost as the result of abortions could have been saved, we might have less need to worry about our declining population. We are told that a wider resort to contraceptives would avoid these needless deaths of mothers and that legalized abortions, if contraceptives failed, are indicated in undesired pregnancies. It seems to me that this constitutes an illogical manner of thinking. We should be grateful for the fertile women and preserve their function, not inhibit or destroy it. Pregnancy must be made safer, it must not be regarded as either an unfortunate accident or a disease, and the increased resort to contraceptives is not the answer to the problems of maternity. The procreative instinct must not be stilled; our young women should be encouraged to develop and not to hamper it.

PHILOSOPHIC BASIS

The wider use of contraceptives is not apparently bringing about that unalloyed state of bliss which certain groups and individuals have promised. Doctors have been looked on as obstructionists to progress in this matter. But we are not obstructionists, we are merely doubters. There has been much sentimental appeal and much loose thinking on this subject and, notwithstanding all that has been said, we are still far from a satisfactory solution of the question of whether conception can be completely or satisfactorily controlled by artificial means. In the meantime the physician must play his part and assume his responsibilities. Whether he concludes to limit his participation to the strictly medical indications for contraceptive advice or whether he is ready to acknowledge the desirability of spacing children or limiting their number when this is needed, he should inform himself of the necessary procedures and their proper application and look on this knowledge as a part of his therapeutic armamentarium. If he declines to do so because of inherent principles or

religious beliefs, that is a matter for his own conscience and for which he should not be condemned.

I feel that too much attention has been centered on the mechanics of birth control and too little on the underlying philosophy which should govern its application. It would be preferable to have the physician consider the points of view of the eugenist, the biologist, the economist and the student of population rather than the so frequently hysterical "contraceptive propagandist." It can hardly be expected that the practicing physician will familiarize himself sufficiently with all the varied factors in the problem, but he should be prepared to evaluate and carry out whatever procedures are necessary as an essential part of his practice. He is a participant in other fields which have a bearing on public health, why not in one of an import equal to that dealing with the prevention of communicable and other diseases? In the handling of a patient afflicted with tuberculosis, syphilis, diphtheria, pneumonia and other illness, he not only administers the remedy but in doing so he must observe the relation of this patient to the community. A similar point of view may be applied to contraceptive measures. There are definite indications for their employment in the presence of disease which have been satisfactorily formulated, but how and when and where to employ them is not at the present time a matter of general medical knowledge, and there is a prevalent hesitancy throughout the profession to make use of whatever knowledge we do possess. It would appear incumbent for medical schools to give such instruction, including not merely a demonstration of means and methods but to implant in the student's mind the wider implications of these practices which should be a part of a physician's armamentarium.

It is frequently claimed that economic and social conditions are the underlying reasons for family limitation. However, if this were true we would not find the procedure so widely practiced among those who may be designated as belonging to the middle and higher income groups. No, we must look elsewhere for such reasons and among the latter must be included the influence of what I myself regard as a vicious propaganda movement, developed and continued by false sentiment and inadequate reasoning. Physicians as a group have failed to evaluate this fact or to have exerted their influence in its regulation. This is a problem committed to their early attention, so that a solution may be possible with benefit to those most concerned, namely the parents of the future.

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ABSTRACT OF DISCUSSION

DR. CHARLES E. GALLOWAY, Evanston, Ill.: I agree with Dr. Kosmak that the medical profession has an important responsibility in the matter of birth control. I should like to mention two important factors: the first is that women do not find their chief sexual expression in sexual intercourse but in reproduction, and the second that we should teach the public the truth; namely, that according to our present knowledge there is no satisfactory method of birth control. Many women and most men are being led to think that a woman's sexual life should imitate that of a man, and our psychologists seem to be the chief source of this erroneous notion. Every erotic book is filled with this same idea. Women discuss the matter freely these days and come to their physician with the query "Why is intercourse not the same with me as with my husband?" The answer is, I suppose, "Why does your husband not have half the babies?" The supreme act of any woman's existence is reproduction and she will be healthier and more normally adjusted to her surroundings if she does reproduce a reasonable number of times. The majority of the women who consult physicians today do not have need for their advice and it would be to their advantage if they were so occupied with the responsibilities of a growing family that they would not have time to become so introspective. The second great responsibility of our profession is to disseminate the truth that we really do not have any satisfactory means of preventing pregnancy. Too many of our profession are conducting birth control clinics and in other ways going before the people, telling them that, if a certain procedure is followed or a certain gadget used, intercourse will not result in conception. There is no gadget or procedure that does not fail a good percentage of the time and there is no time in the month when conception cannot take place. In my private practice I see an average of one patient who is pregnant against her will about every two weeks. She invariably comes with the story that she went to a birth control clinic or a doctor and was fitted with a diaphragm and told that by using it properly she would not conceive. I have also delivered at least ten so-called "rhythm" babies. I have seen the published statements of some of my colleagues maintaining that hundreds of diaphragms had been fitted without a failure, and you know that such a statement is not the truth. Therefore, our two chief responsibilities are, first, the dissemination of knowledge relative to the proper place of reproduction as regards the happiness and well being of women and, second, that the present methods of birth control are far from satisfactory.

DR. JOSEPH L. BAER, Chicago: I am convinced that those who seek information about family limitation and family spacing for whatever reason are entitled to get that information from their physician. The Council's Committee on Contraceptives of the American Medical Association hopes that clinical research of adequate quality will enable it to make recommendations within the next year. The public interest is directly concerned with the endless stream of newborn who by known medical criteria are reasonably certain to become public burdens. The legislatures which have sanctioned sterilization are far sighted and are serving the public interest. I believe that the influence of the American Medical Association should be directed toward furthering this method of control of an unfit population. I am equally convinced that the present wave of deliberate family limitation, based on the desire of the parents to have only as many children as they can rear and educate as they would like them to be reared and educated, will give way in due course to the normal desire and most parents to have more children than this present handicap seems to permit. Finally there is great anxiety lest the widespread dissemination of contraceptive information will undermine the morals of our youth. License and promiscuity are far more current today than they were a generation ago. This is observable in all walks of life. This is a problem of the home. Ethical values and morality must be instilled in children by their parents. It is my hope that the current wave of lax morals will eventually subside as our home life regains its stability and its recognition of the essential value of all the virtues. I should like to call attention to what I think was a most significant movement in this whole field. Last fall the Student Religious Association of the University of Michigan had a course of six lectures under the auspices of a combined faculty and student committee, the course being entitled "Marriage Relations." The lectures were characterized as follows by the committee: "In this series we wish to get away from sociological and philosophical platitudes and present the facts as they are in a frank and accurate manner, making the course as practical as possible." In my discussion I followed this outline: 1. The attitudes toward discussion of sexual problems are changing, from ignorance and tabu to a demand for accurate and sane information. 2. The large number of cases of marital maladjustment and divorce constitute a challenge. 3. It is necessary to replace many fears, tabus and superstitions surrounding the physiology of reproduction and sexual practice by scientific facts. 4. Marriage must be thoughtfully considered by college students, and the information obtained by specialists who have carefully and thoroughly studied married relations must be interpreted and frankly discussed. 5. The beauty of romance is not spoiled by true understanding; rather, intelligent appreciation of important factors of emotional and sexual problems will help prevent disillusionment afterward.

DR. FRED J. TAUSSIG, St. Louis: It is difficult to dissociate the purely medical aspects of birth control from its socio-

economic environment. Yet as far as it is possible and practical it is our duty as physicians to do this. Let those who are concerned with problems of population growth, with economic want, with improper education and other social phases of an uncontrolled birth rate organize, discuss and take action on these matters. How far physicians may desire to cooperate in this movement is not our concern. We are concerned, however, in the medical phases of birth control, in the cases in which the proper spacing of children, the condition of the heart, kidneys and lungs of the mother present a contraindication to pregnancy for shorter or longer periods of time. Let us as physicians recognize that this is a matter that concerns every one of us regardless of creed. Some may advise one method, others may advise a different procedure, but we all recognize the cases in which a pregnancy presents a peril to the preservation of the family, and that in married life prolonged continence is not practical. Let us all get together and attack this problem scientifically. There must be other methods besides the so-called safe period that would be acceptable to those who do not approve of mechanical or chemical procedures. Intensive research as to better methods must be carried on by all groups. Some may approve one, some another method, but the advisability of preventing conception for shorter or longer periods to preserve the mother's health is an accepted fact.

DR. JOHN ZELL GASTON, Houston, Texas: The points that have been brought up here today bring out clearly the need for scientific information on contraception. There are three questions of vital interest, namely: 1. Is birth control effective? 2. What is the relationship between birth control and abortions? 3. Is birth control dangerous? At the Maternal Health Center of Houston in the past three years we have seen 2,635 cases, and in that length of time we have not found a single one in which scientific evidence can say that birth control has been harmful. Is birth control effective? We heard one of our discussers say that birth control was not effective and that reports were made of thousands of cases of failure. Here are our results. Of 2,500 women, we have had thirty-seven failures to date, or an efficiency of 98.5 per cent. What is the relation between abortion and contraception? The answer is a negative one, like the relationship of black to white, but we were curious to find out the frequency of abortions before contraception was used; hence a careful history was taken and we have the data to offer on a study of 2,069 case histories. We divided our cases into white, colored and Mexican groups. Of 1,002 white patients, 357 admitted one or more abortions before coming to the clinic. There was a total of 615 abortions in the 1,002 white patients, and one woman admitted fifteen abortions having been done on herself. In other words, 35 per cent of the white women had had abortions before applying to our clinic for birth control. The Negro patients show practically the same ratio: Of 730 Negroes, 211 admitted a total of 354 abortions. Mexican patients have almost exactly the same ratio; namely, of 337 Mexicans, 114 admitted on admission a total of 185 abortions. Birth control clinics do not condone abortions, and any statement to the contrary is not true. On the other hand, we teach that abortions are dangerous. The need for this teaching is brought out clearly by this study. If the figures we obtained are at all representative, the frequency of abortion the country over will reach a staggering figure. Of 2,069 white, Mexican and colored married women in the low income group, 682 admitted a total of 1,154 abortions before seeking advice on contraception. Therefore we need some scientific observations on this point to separate the dogma from the fact.

DR. GEORGE W. KOSMAK, New York: There is just one item to which I should like to refer; namely, the placing of the extramural clinics on a more satisfactory foundation. As far as I know there is no formal licensing of birth control clinics and in this country these operate more or less without the pale of the law. If this question is such an important one, I believe that the profession should recognize it to the extent of providing regularly licensed clinics in hospitals. There is no need, in my estimation, for separating clinics devoted to this particular part of the practice of medicine from those of any other, and it seems to me that one of the early steps in the movement to standardize this entire procedure is to provide for more hospital clinics so that they can be kept under control and definitely managed under medical auspices.

AN EPIDEMIC OF POLIOMYELITIS

IN WHICH BULBAR PARALYSIS OCCURRED WITH UNUSUAL FREQUENCY

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During the two months period from July 23 to Sept. 20, 1938, twenty cases of poliomyelitis occurred in the city of Niagara Falls. However, one of the cases occurred in a resident of an adjoining town who was a frequent visitor to Niagara Falls and had had a tonsillectomy performed in that city fourteen days before the onset of poliomyelitis. There was an unusually low incidence of poliomyelitis in New York State during 1938 and the epidemic character of the series of cases in Niagara Falls is shown clearly by a comparison of attack rates in that city with attack rates in the state as a whole and in adjoining areas (table 1). The most striking features of this outbreak were the large proportion of cases in which bulbar involvement was observed and the high fatality rate. In thirteen of the twenty cases definite bulbar paralysis was observed and twelve of these terminated fatally, a fatality rate of 60 per cent.

TABLE 1.—*Prevalence of Reported Poliomyelitis: New York State, Niagara Falls and Adjoining Areas, 1938*

	Cases	Attack Rate
New York state	121	0.89
Niagara Falls city	19	23.37
Niagara county*	1	1.30
Erie county	3	0.31
Orleans county	0	....
Genesee county	1	2.17
Province of Ontario	163	4.6

* Exclusive of Niagara Falls city.

CLINICAL CHARACTERISTICS

The onset of the illness was in most instances characterized by mild gastrointestinal disturbance or evidence of mild infection of the upper respiratory tract, or both. In several cases there was a lapse of several days between the first indisposition and the onset of paralysis. In the majority, however, there was a sudden onset with rapidly progressive paralysis. Marked rigidity of the neck and of the spine was observed in almost every case. As shown in table 2, spinal fluid was obtained for examination in eleven of the twenty cases and moderately increased pressure was observed in all eleven. Cell counts of the spinal fluid varied from 17 to 450. An increase in globulin was reported in nine of the eleven specimens of spinal fluid.

Extensive peripheral paralysis was the usual finding, and only one nonparalytic case was observed, although diligent search was made for mild or abortive cases. In ten of the fatal cases peripheral paralysis was followed by a rapidly progressive bulbar paralysis with respiratory failure. In one case there was no evidence of peripheral paralysis, the first evidence of paralysis being difficulty in articulation. In another case bulbar and peripheral paralysis apparently occurred simultaneously. Table 3 shows the muscle groups involved, the classification of the cases according to the type of paralysis observed and the outcome of the case.

Because of the frequency of the bulbar type of paralysis, careful inquiry was made as to previous tonsillectomy or other operative procedure in the mouth, pharynx or nasopharynx. As seen in table 3, only four of the patients had ever undergone a tonsillectomy; two of these had had the tonsillectomy four and fourteen years previously. One had been tonsillectomized four months before the onset of poliomyelitis and one had had a tonsillectomy and adenoidectomy two weeks before the onset of poliomyelitis. No history of other operative procedures could be elicited.

TABLE 2.—*Poliomyelitis in Niagara Falls, 1938*

Case Number	Sex	Age	Date of Onset	Tonsillectomy Date	Spinal Fluid	
					Cell Count	Globulin
1	♂	3 yrs.	7/23	None	54	+
2	♂	2 yrs.	7/27	None	20	+
3	♂	13 yrs.	8/ 7	April 1938	Not done	
4	♂	3 yrs.	8/ 9	July 26, 1938	70	+
5	♀	2 yrs.	8/14	None	Not done	
6	♂	5 mos.	8/20	None	Not done	
7	♀	8 mos.	8/22	None	80	+
8	♀	4 mos.	8/24	None	Not done	
9	♀	7 yrs.	8/27	None	60	+
10	♂	6 yrs.	8/29	1934	450	+
11	♂	8 yrs.	9/ 1	None	Not done	
12	♂	14 mos.	9/ 5	None	30	0
13	♀	8 yrs.	9/ 6	None	Not done	
14	♀	8 yrs.	9/ 7	None	Not done	
15	♂	18 yrs.	9/10	1924	130	+
16	♀	5 yrs.	9/12	None	Not done	
17	♂	21 yrs.	9/16	None	180	+
18	♂	11 mos.	9/17	None	17	+
19	♂	23 mos.	9/20	None	Not done	
20	♀	? yrs.	9/20	None	122	0

ETIOLOGY

A portion of the cord and brain stem obtained at autopsy from patient 16 was sent to Dr. Charles Armstrong at the National Institute of Health, who reported that an emulsion of the material inoculated into a rhesus monkey produced paralysis and death on the seventh day and transfers to a second monkey produced typical paralysis. Pathologic study of the cord of the second monkey showed evidence of severe poliomyelitis. Three additional transfers produced typical poliomyelitis.

A portion of brain and cord removed at autopsy in case 13, also studied by Dr. Armstrong at the National Institute of Health, produced paralysis in a monkey and through three transfers tremors and paralysis were produced. Pathologic study of the tissues resulted in a diagnosis of poliomyelitis, although this strain was apparently less virulent for monkeys than the strain taken from patient 16.

Microscopic examinations in case 13 at the Division of Laboratories and Research of the New York State Department of Health confirmed the diagnosis of poliomyelitis, and inoculation of the material into a monkey produced typical experimental poliomyelitis; further passage through a second animal gave similar results. Histologic appearances in both monkeys were those of poliomyelitis. Nasal washings from patient 17, obtained on the sixth day of illness, were sent to Dr. Armstrong, who reported that this material filtered and inoculated into a rhesus monkey failed to produce symptoms.

EPIDEMIOLOGIC EXAMINATIONS

Twelve of the cases occurred in males and eight in females; the ages varied between 4 months and 21 years. Twelve of the patients were 5 years of age or younger and all but three were under 10 years of age. Seven of the cases were in children of Italian descent and four were in children of recent descent from other European nationalities. There was a rather definite geographic grouping of cases in the city. Ten of the cases occurred within a radius of three city blocks and all but two occurred in persons residing within ten blocks of the Niagara River. This did not, however, constitute a definite concentration of cases near the waterfront, because the city is located at a bend in the river and is distributed along both arms of the angle. The economic status of the families in which cases occurred was in general a little below average, but in none was there evidence of great poverty. The children suffering from the disease almost invariably were especially healthy and well nourished prior to the illness. No history of direct contact between the patients was obtained, but in a number of instances friends were found to have been common to more than one patient. No multiple cases occurred in any household nor were there any suspicious illnesses among contacts of the patients. In only one instance was there a history of previous poliomyelitis in the immediate family, and in one there was a history of poliomyelitis in a first cousin several years previously.

No one milk supply was found to have been used by any disproportionate number of the patients. The usual water supply in all but one case was the municipal supply. In less than one third of the cases a history of recent use of a bathing beach or swimming pool was obtained and various bathing places were used by these. No history of recent insect bites was obtained in any case. Many of the patients, however, had died by the time the epidemiologic investigation was made, and the history obtained from the parents, although apparently given much thought, is open to question. Mosquitoes were prevalent at the time of the outbreak and were apparently more prevalent than is usual at that season.

TABLE 3.—*Muscle Groups Involved and Clinical Classification in Niagara Falls of Poliomyelitis, 1938*

	Muscle Groups Involved							
Case No.	Upper Extremities	Lower Extremities	Abdominal and Trunk Muscles	Muscles of Deglutition	Facial and Ocular Muscles	Evidence of Respiratory Failure	Clinical Classification	Outcome
1	+	+	+	+	?	+	Bulbospinal	Died
2	?	?	0	+	+	+	Bulbospinal	Died
3	+	+	+	0	0	0	Spinal	Recovered†
4	0	0	0	+	+	?	Bulbar	Died
5	?	+	?	+	+	+	Bulbospinal	Died
6	+	+	?	+	?	+	Bulbospinal	Died
7	+	+	+	0	0	0	Spinal	Recovered†
8	+	+	?	?	?	+	Bulbospinal	Died
9	+	+	?	+	?	+	Bulbospinal	Died
10	0	0	0	0	0	0	Nonparalytic	Recovered
11	+	+	0	0	0	0	Spinal	Recovered†
12	0	+	+	+	0	0	Bulbospinal	Recovered†
13	+	0	?	+	0	+	Bulbospinal	Died
14	0	+	0	0	0	0	Spinal	Recovered†
15	+	+	+	+	0	+	Bulbospinal	Died
16	+	+	+	+	+	+	Bulbospinal	Died
17	+	0	0	0	0	0	Spinal	Recovered†
18	0	+	+	0	0	0	Spinal	Recovered
19	+	+	0	0	0	+	Bulbospinal	Died
20	+	+	+	+	0	+	Bulbospinal	Died

+ indicates definite positive signs; 0, no evidence of paralysis.
† Recovered with residual paralysis.

This unusual prevalence of mosquitoes was observed, however, in other areas in the state. Several parents, when questioned as to prevalence of insects or vermin, remarked that an unusual number of spiders had been observed. In no instance was there a known close association with horses. Cats and dogs were associated as pets in several instances, but no definite evidence of association of more than one case with the same pet was observed. No evidence of rat infestation of homes was noted.

SUMMARY AND CONCLUSIONS

A definite epidemic prevalence of poliomyelitis occurred in the city of Niagara Falls during July, August and September 1938. Clinical and laboratory observations confirmed the diagnosis of poliomyelitis.

Thirteen of the twenty cases showed evidence of bulbar paralysis; twelve of these cases terminated fatally.

In only two of the cases classified as bulbar in type had a tonsillectomy ever been done, one two weeks preceding the onset of poliomyelitis and one four years preceding the onset. No other operative procedure in the mouth, nose or throat had preceded the poliomyelitis in these cases.

No evidence of direct or indirect contact between cases could be elicited, but there was a distinct grouping of cases in a limited area. No factor in the environment was found to be common to any large proportion of the cases other than the water supply.

Clinical Notes, Suggestions and New Instruments

PREGNANCY COMPLICATED BY ACUTE ANTERIOR POLIOMYELITIS

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Little has been written on pregnancy complicated by acute anterior poliomyelitis. This is especially true of case reports that were followed to term and through parturition. One of the most recent articles on this subject was published in July 1933 by Brahdy and Lenarsky,[1] in which three cases were reported which were followed post partum. The summary of eight previous cases was also given. It is likely that a few other similar cases may not have been reported. Nevertheless, the incidence of epidemic poliomyelitis during pregnancy is probably rare.

This case is of particular interest not only because of the unusual and hazardous complications of gestation but also because of the many problems which were encountered relative to the disease process per se. Some of the questions for consideration were (1) viability and effect of this disease on the fetus, (2) the antiviral power of the fetus toward this disease, (3) type of delivery necessary, (4) whether surgical intervention would be advisable prior to term and (5) effects of the muscle atony on the parturient canal and bony pelvis.

In the eleven cases previously reported, delivery of the child was spontaneous in most instances, although there were two cesarean sections and one therapeutic abortion. The newborn infants were not infected by the poliomyelitis virus, although there was one stillbirth in which no evidence of this disease was shown but death was due to prematurity.

There are two schools of thought regarding the occurrence of poliomyelitis in pregnant women. Aycock[2] is of the opinion that poliomyelitis may occur more frequently in the latter part of pregnancy than would normally be expected if this condition had not been predisposed to the disease. On the other hand, Jungeblut and Engle[3] state that both early pregnancy and infancy are the high water marks of natural resistance to poliomyelitis. Their accounts were based on the results of the examination of blood from several women during various stages of pregnancy. They found higher antibody titers than are commonly found in healthy, nongravid persons. McGoogan[4] in 1932 published an article on three cases of pregnancy complicated by poliomyelitis and also the results in five similar cases which were reported in the literature during a period of twenty-five years. This is the first case of its kind in this hospital since its inception twenty-three years ago.

REPORT OF CASE

History.—E. W., a woman aged 28, was admitted to this institution Aug. 16, 1938, by transfer from one of the near general hospitals. She had had measles, epidemic parotitis and varicella; otherwise the past history was not remarkable. The patient was married; her husband and one child were living and well. Her father and mother were both living and well.

One week prior to admission, the patient complained of severe headache and felt "feverish." This condition was followed in a short time by nausea and vomiting. The family physician was called and made a tentative diagnosis of meningitis, based on the meningeal manifestations. The patient was immediately sent to a general hospital, where a spinal tap was performed and meningococcus serum was introduced intrathecally, as is customary in many institutions in cases of suspected meningitis. Twenty-four hours later she noticed an inability to move her legs and complained of severe pain through both lower and upper extremities and the lumbosacral region. She also gave a history of being unable to void urine or defecate. She was then transferred to Bergen Pines. It was further learned from the history that she had been gravid for five and one-half months. Cessation of menses occurred in the month of March, approximately five months prior to admission.

Physical Examination (by systems at time of admission).—The patient was found to be well developed and well nourished. She appeared very lethargic and responded poorly to questions, although answers were coherent. Her face was flushed, the skin moist and smooth, and there was no evidence of any eruption over the entire body.

The eyes were normal except that the pupils were dilated slightly more than normal. There was slight deviation of the septum to the left. The pharynx was mildly injected. The tonsils were atrophic and submerged. There were slightly palpable anterior and posterior cervical glands.

The heart sounds were distinctly audible over the entire precordium. No adventitious sounds were heard. There was moderate tachycardia. Respiratory excursions were diminished, more noticeably on the right side. The breath sounds were heard clearly throughout the upper two thirds of the chest and slightly diminished over the bases, especially anteriorly. No rales were heard.

The abdomen was markedly distended and the uterus could be palpated, extending from behind the symphysis to three finger-breadths below the umbilicus. There was a tympanitic note heard on percussion over the entire abdomen, except for the lower third, which was dull because of retention of urine in the bladder. Tenderness was elicited over both costovertebral regions. The fetal heart sounds were heard with difficulty, and the rate could not be determined.

The neck was markedly rigid. The pupils were slightly dilated but reacted to light and in accommodation. The ophthalmoscopic examination revealed normal fundi. The right palatine muscles were paralyzed. The pharyngeal reflex was diminished and phonation impaired. The intercostal group of muscles were weak bilaterally, as evidenced by the diminished respiratory excursion, more so on the right. The abdominal reflexes could not be elicited. Peristaltic or borborygmic sounds could not be heard in spite of marked distention. There was no muscular contraction on voluntary effort. There was also paralysis of the lumbosacral group of muscles.

There was weakness and partial paralysis of the arm, forearm and shoulder girdle of both upper extremities. There was complete flaccid paralysis of both lower extremities from the trunk line down. In addition, there was involvement of the autonomic nervous system as related to the gastrointestinal tract and the urinary bladder, resulting in an inability to defecate and void.

Kernig's sign was positive bilaterally. Both patellar and achilles reflexes were absent. Babinski, Oppenheim, Gordon

The authors were aided by Dr. William Tompkins, who cooperated in this case.

1. Brahdy, M. Bernard, and Lenarsky, Maurice: Acute Epidemic Poliomyelitis Complicating Pregnancy, J. A. M. A. **101**: 195 (July 15) 1933.
2. Aycock, W. L.: J. Prev. Med. **4**: 201 (May) 1930.
3. Jungeblut, C. W., and Engle, E. T.: Resistance to Poliomyelitis, J. A. M. A. **99**: 2091 (Dec. 17) 1932.
4. McGoogan, L. S.: Acute Anterior Poliomyelitis Complicating Pregnancy, Am. J. Obst. & Gynec. **24**: 215 (Aug.) 1932. Miller, N. F.: J. Michigan M. Soc. **23**: 58 (Feb.) 1924.

and ankle clonus were all negative. Biceps and triceps reflexes were also negative. The Hoffman sign was negative.

Since the paralysis was ascending, beginning with the lower extremities and progressing upward, it was very similar to Landry's type. A diagnosis of acute anterior poliomyelitis, early paralytic stage, superimposed on a five and one-half months pregnancy, was made from the results of the foregoing examination and the confirming spinal fluid report, which will be given along with other laboratory data.

On admission August 16 the urine was normal. Blood examination revealed 3,870,000 red blood cells, hemoglobin (Sahli) 80 per cent, 11,250 white blood cells, polymorphonuclears 85 per cent, lymphocytes 14 per cent, mononuclears 1 per cent.

A throat culture was positive for hemolytic streptococci.

As the result of a spinal tap, opalescent fluid was removed under slightly increased pressure with 180 cells: polymorphonuclears 48 per cent, lymphocytes 52 per cent, globulin reaction 2 plus, sugar 74 mg. per hundred cubic centimeters. Chloride determination was not done. The spinal fluid report obtained prior to the patient's transfer was similar.

Course.—This was very stormy, owing to the patient's extreme toxemia and the extensive paralytic involvement. Her facies, which was very conspicuous, varied from marked apathy to extreme apathy.

On the second day following admission the patient had a chill, the temperature rising to 106 F. At this time she became irrational. Fortunately, this condition was transitory in nature and the patient regained her mental clarity within twenty-four hours. The gastrointestinal atony, simulating a paralytic ileus, and the associated distention, which was very resistive to almost all remedial agents, contributed greatly to the respiratory embarrassment, which had already been hampered by partial paralysis of the intercostal and diaphragmatic muscles. Bowel evacuation was obtained only by daily enemas. Frequent catheterization was necessary owing to rapid filling of her temporarily denervated bladder. In the following few days there developed a urinary tract infection which, along with the toxemia, caused a continuation of the septic type of temperature, which ranged between 101 and 104 F. for a period of sixteen days. Blood studies at this time revealed a hypochromic anemia, which further complicated the clinical course. This iron deficiency anemia was unlike the usual anemia associated with pregnancy in that it was very resistive to therapy. Massive doses of ferric and ferrous salts in the form of sulfate, carbonate and ammonium citrate were given at different times with no apparent response. Liver and vitamin B_1 were then given, along with the iron salts, but these also were of no substantial value. Multiple transfusions were necessary to help maintain the hemoglobin and red blood cells at a fairly constant level, in spite of which they remained slightly subnormal. We attributed this anemia not only to the pregnancy but also to the toxemia, which may have partially exhausted the hemopoietic system. Hemoglobin levels ranged between 50 and 77.

August 28, blood examination revealed 3,190,000 red blood cells, hemoglobin 61 per cent, 20,900 white blood cells, polymorphonuclears 90 per cent, lymphocytes 8 per cent, mononuclears 1 per cent, basophils 1 per cent. The polymorphonuclear cells showed toxic granules.

Urinalysis at this time revealed the specific gravity to be 1.010, acid reaction, a heavy trace of albumin, pus clumps, and many white blood cells and bacteria.

The patient's condition was considered critical for eighteen days. Following this period she started to show gradual and progressive improvement. The temperature returned to within normal range. The abdominal distention, however, continued to cause her discomfort frequently, but less so than previously. Within the following four weeks it was noticed that there was some muscle restoration in both upper extremities, the chest and the trunk. There was a return of bowel and bladder function to voluntary control. The pyelitis improved but still showed occasional pus clumps and traces of albumin in the daily specimens of urine. The blood pressure, which had been 160/90, finally became 138/85. It was possible that the poliomyelitis had begun to precipitate a preeclamptic state earlier in this disease.

The remaining course in the hospital was comparatively uneventful. During the entire stay of the patient in the hospital the fetal heart sounds could be heard and movements could be felt both objectively and subjectively. The size of the gravid uterus reached to one fingerbreadth above the umbilicus prior to discharge.

Treatment.—Although the value of convalescent serum is still controversial, there have been some encouraging reports following the administration of large doses of serum intravenously early in the disease. Our own experience with convalescent serum has always been of doubtful value. Nevertheless, the patient was transfused with the blood obtained from an adult who had recovered from this disease. It was believed that it would therefore serve a twofold purpose (1) as a therapeutic for the toxemia and (2) for possible specific antibody effect. The specificity of this procedure was doubtful.

Vitamin B_1 and C parenterally was also given, as this form of treatment has been suggested more recently by various workers in this field. Vitamin B_1 intraspinally, as suggested by Stern[5] in one of his recent reports, was decided against, as we feared the possibility of further meningeal irritation and development of a chemical meningitis, which one of us (S. A. L.) has observed. The remaining treatment consisted essentially of hypertonic intravenous infusions in the form of 50 per cent sucrose, spinal taps as indicated, multiple transfusions, iron and liver therapy, ultraviolet radiation and other symptomatic and supportive measures. The orthopedic care was limited to immobilization of the involved members, followed three months later by very gentle massage therapy.

Although the patient was discharged with the understanding that she should be further hospitalized for orthopedic and obstetric care, she preferred to remain at home under the care of her family physician and obstetrician for economic reasons. The course while at home, as related to us by her family physician, was also uneventful except for the persistent anemia.

December 20 the patient suddenly experienced labor pains and was immediately rushed to the hospital. The labor progressed rapidly and it was felt then that she might precipitate. On arrival at the hospital she was taken immediately to the delivery room and delivered a 6 pound (2,720 Gm.) living girl baby in apparently good condition. The delivery itself was rather simple, although it required forceps and episiotomy.

Her postpartum course was also uneventful. In spite of an apparently lowered resistance, no puerperal infections developed. She had received three transfusions and her blood picture returned to normal within three weeks. The infant's condition remains good up to the present writing, showing no evidence of paralytic involvement.

COMMENT

In reviewing the case, one is inclined to believe that the antiviral titer toward poliomyelitis in gravid women does not differ from that of other adults who may contract this disease. However, this is not true, apparently, as it has been pointed out that the incidence of poliomyelitis during pregnancy is relatively low. The fetus perhaps does not contract the disease, as the virus probably does not enter the placental circulation. However, there has been a case report by Lance[6] of poliomyelitis in the newborn, but the evidence presented is inconclusive and there was no history of an acute infection during the course of pregnancy. If death does occur to the fetus, it is probably due to the toxemia which accompanies poliomyelitis rather than to the virus per se.

With regard to the parturition, there is apparently no variation from other paraplegias due to other causes such as spinal cord tumor or trauma except that, in the latter, labor is painless, although in cases with respiratory involvement cesarean section may be indicated before term if the increasing size of the uterus further hampers respiration. Also in those cases of bulbar involvement in which death is imminent a cesarean section should be done immediately after the patient's death to save the viable fetus.

5. Stern, E. L.: The Intraspinal (Subarachnoid) Injection of Vitamin B_1 for the Relief of Intractable Pain and for Inflammatory and Degenerative Diseases of the Central Nervous System, Am. J. Surg. **39**: 495 (March) 1938.

6. Lance: Infantile Paralysis Noted at Birth, Bull. Soc. de pediat. d. Paris **31**: 229 (May) 1933.

This case differs from most of those that have been reported because of the extensive involvement which, unfortunately, the patient encountered because of her relatively high susceptibility and other complications which developed relating to both pregnancy and poliomyelitis. Nevertheless it is encouraging to learn further that these women can deliver normally and also give birth to healthy infants.

Blood studies of the child and the mother for neutralization against the poliomyelitis virus have been determined. The laboratory results of the tests on the newborn babe show that she carries poliomyelitis neutralizing antibodies in such amount that 0.2 cc. neutralized about 25 minimal infective doses of virus in an exposure of two hours at 37 C. followed by an overnight temperature of 4 C.[7]

The mother's blood, which was studied six months following the acute onset of the disease, showed a very high antiviral blood content, as the control monkeys developed acute anterior poliomyelitis eleven days after intracerebral inoculation, while those injected with the serum virus mixture remained healthy. The laboratory procedure in the latter instance was done merely to determine whether the patient may have lost any of her immunity since the onset of the disease.

GROUP COLOR VISION TESTS

CONRAD BERENS, M.D., AND LESTER STEIN, M.D., NEW YORK

The desirability of including routine color vision tests in all eye examinations is widely recognized. Of particular importance is the evaluation of the color vision of civil service applicants, motor vehicle licensees, mariners, railway employees and others whose occupations require normal color vision. Routine school examinations should include some form of color vision testing, but the necessity of examining large classes has frequently led to the omission of color vision testing. The regular physical examination for the military services includes rigorous color vision tests.

When large groups of persons are involved, color vision tests by the present methods are usually arduous and expensive and require the services of numerous examiners. Therefore the need for quick, accurate, acceptable color vision tests of large groups of persons is evident.

METHOD

The method to be described apparently fulfils the requirements for color vision tests for large groups of subjects. A search of the literature from 1929, when color photography became more accurate, reveals no mention of this method. It employs among other tests the standard pseudo-isochromatic Ishihara or Stilling charts, which are world accepted for testing color vision. The published color vision charts are copied with Kodachrome film and then made into colored lantern slides. These colored lantern slides can be made in miniature size by employing the 35 mm. Kodachrome film. The copies can be made with any of the usual miniature cameras available in conjunction with the manufacturer's recommended copying accessories. In this way 2 by 2 inch miniature lantern slides are obtained. These are suitable for projection in any of the special miniature lantern slide projectors. The image projected is just as large, clearly defined and of good color value as that projected with the large lantern slide projectors. For those wishing to use the large lantern slide projectors, however, it is also feasible, but more expensive, to employ 3¼ by 4¼ inch sheet Kodachrome film and make large slides for use in the large projectors. The larger slides afford no advantage over the miniature slides. For best projection results glass bead screens should be employed. Many models, both of fixed and of portable types, are available commercially.

This projected test has been used in testing color blind persons and the results have been compared with a similar test employing the original test plates. It was found that the results were identical.

TECHNIC OF EXAMINATION

In actual use the test is performed as follows: The subjects are seated in a suitable projection room, semidarkened to permit a good view of the screen, and each is supplied with a printed schema containing key numbers corresponding to the slides, which are projected on the screen in order. The subjects are required to write the figure that they identify on the pseudo-isochromatic chart projected on the screen next to the key number on the schema. The written responses may be rapidly totaled by matching them with the master record, and a quick estimate of color vision can be made and duly recorded. This permanent record may be kept for future comparisons to be written in adjacent columns.

ADVANTAGES

The advantages of the method are the ease with which the tests are performed on large groups of subjects and the small expense involved. A few examiners can determine the color vision of thousands of subjects in much less time than has hitherto been required.

Permanent self-written records are obtained and repetition of the test is fairly simple and easily carried out and can be performed as part of an annual examination.

Easy interchangeability of the various color tests is afforded because one can employ Ishihara or Stilling charts or other forms of pseudo-isochromatic charts with equal facility by merely altering the order of the slides.

The malingering tests included in the Ishihara and Stilling plates, the threshold tests after the Young method, the Edridge-Green and other lantern tests, the Worth four dot test[1] and its modifications[2] and the kindergarten chart with colored figures[3] may be similarly projected.

Visual acuity need not be normal, since it is easy to magnify the images by projection and thus obviate errors occasioned by subnormal vision of moderate degree.

Disturbances of color vision which are found in certain diseases, e. g. toxic amblyopia, optic neuritis and retrobulbar neuritis, may be revealed.

Motor vehicle license control is facilitated greatly by this method of testing large groups of licensees.

For the testing of illiterate subjects and young children, charts have been constructed employing the international broken ring, the illiterate E or the Snellen pronged figure. In addition, for little children pseudo-isochromatic tests may be drawn using kindergarten figures such as animals, toys, men, dogs, boats and similar easily recognized objects placed on a confusion color background. A method of constructing these charts simply has been devised and is being studied at the Lighthouse Eye Clinic.

An important corollary of this method is the possibility of employing projected color slides of various scenes, objects and charts to educate color blind persons to differentiate various colors and by association teach them to adapt themselves to their environment.

In addition, it is feasible to include the test in any of the projector type visual acuity apparatus now available, for example the Ferree-Rand visual acuity projector or the projectoscope, and thus increase the field of usefulness of these machines and provide satisfactory office color vision tests.

SUMMARY

In a method for testing large groups of subjects for disturbance of color vision the Kodachrome film is employed to make colored copies of the Ishihara or Stilling or newly constructed charts in either miniature (2 by 2 inch) or regular (3¼ by 4¼ inch) sizes.

Projection of the slides yields good images, readily perceived in large audience halls and thoroughly satisfactory for the testing of the color vision of large groups of subjects.

The advantages include ease of testing, small expense and permanent records, written by the subject himself. Disturbances

7. Neutralization tests for poliomyelitis by Dr. John Kolmer, Research Institute of Cutaneous Medicine.

Aided by a grant from the Ophthalmological Foundation, Inc.

Presented before the Section on Ophthalmology, New York Academy of Medicine, April 17, 1939.

From the Department of Research of the Lighthouse Eye Clinic of the New York Association for the Blind.

1. Worth, Claud: Squint: Its Causes, Pathology and Treatment, London, Bailliere, Tindall & Cox, 1921, p. 14.

2. Hardy, L. H.: A Modification of the Four Dot Test, Tr. Am. Acad. Ophth., 1937, p. 491. Berens, Conrad: Modification of the Worth Four Dot Test, Am. J. Ophth., to be published; A Test for Binocular Vision, Particularly Applicable to the Examination of Amblyopic Children, Tr. Am. Ophth. Soc., 1939.

3. Berens, Conrad: Kindergarten Visual Acuity Chart, Am. J. Ophth. **21**: 667 (June) 1938.

of color vision, which would suggest further studies for the diagnosis of certain diseases, may be revealed by these mass color vision tests. This method of testing greatly facilitates the examination of drivers of motor vehicles, aviators, railroad employees and applicants for the army, navy and marine services. Forms of the pseudo-isochromatic color vision tests, employing illiterate and kindergarten figures and the international broken ring, are being developed.

The possibility is suggested of educating color blind persons to differentiate colors by demonstrating colored scenes and charts.

35 East Seventieth Street.

WOOD TICK SIMULATING PEDUNCULATED TUMOR

KURT WIENER, M.D., MILWAUKEE

Ormsby writes that the female of the wood tick (Ixodes) after sucking blood from the skin swells to the size of a pea or a small bean and may be mistaken for a small pedunculated tumor. How true this is may be illustrated by the case reported here.

Fig. 1.—Appearance of patient's chest.

An elderly man who has a number of partly pedunculated and pigmented senile keratomas and fibromas on his chest (fig. 1) complained that one of them started to burn and itch. At first glance the little tumor did not look especially different from the others. When viewed more closely (fig. 2) the coffee bean size tumor was found to have eight legs and proved to be a wood tick (Ixodes) which the patient had picked up in the woods of

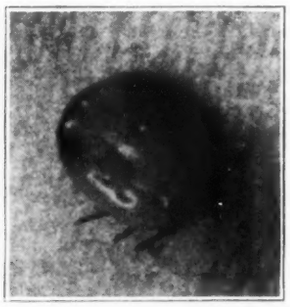


Fig. 2.—Close view of object indicated by arrow in figure 1.

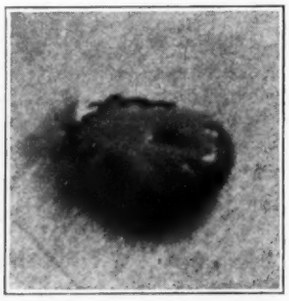


Fig. 3.—Wood tick with beak buried in skin.

Northern Wisconsin two weeks previously. The tick, apparently aware of the high value of good mimicry and well acquainted with Ormsby's textbook, had chosen a human skin with little tumors where it could partake of its sanguinary meals with much less danger than on a normal skin. A drop of turpentine helped to remove it. Figure 3 shows how its beak is buried in the skin.

425 East Wisconsin Avenue.

INTESTINAL OBSTRUCTION CAUSED BY COLLOIDAL ALUMINUM HYDROXIDE

W. PAUL HAVENS, M.D., PHILADELPHIA

Colloidal aluminum hydroxide has been widely used for the treatment of peptic ulcer since Crohn reported its value as an antacid in 1929. There has been little information available concerning any untoward effects. Kraemer [1] described frequent constipation and the occurrence of fecal impaction in two cases, but the majority of observers have not mentioned such complications.

The following case illustrates the danger which exists and the unfortunate result which may occur when colloidal aluminum hydroxide is used in the treatment of certain cases of bleeding duodenal ulcer.

M. F., a Negro woman aged 59, a widow, was admitted to the hospital complaining of generalized weakness and intermittent pain in the lower part of the abdomen of two weeks' duration.

There was moderate enlargement of the heart, and the blood pressure was 180 systolic and 110 diastolic. She was treated for hypertensive cardiovascular disease for three weeks. At the end of this time an episode occurred which suggested a sudden internal hemorrhage. She became weak and restless and the mucous membranes appeared pale. The blood pressure fell to 110 systolic and 60 diastolic, and the pulse rate rose to 138. The hemoglobin content and the red cell count, which had been 80 per cent and 3,850,000 respectively, fell to 30 per cent and 1,000,000. Several unformed stools were tarry. She was given frequent feedings of gelatin water and gruel with 8 cc. of colloidal aluminum hydroxide every two hours for three and one-half days. A tube was then placed in the stomach, and a constant drip of two parts water and one part colloidal aluminum hydroxide was allowed to flow in at a rate of 2,000 cc. in twenty-four hours. To this was added 160 cc. of corn syrup (karo) for two days. The patient remained in poor condition in spite of frequent transfusions of blood. Bleeding from the bowel continued and she failed to gain strength. Although she was given liquid petrolatum only once, enemas were effective at least every other day and frequent examinations for fecal impaction gave negative results. Because of restlessness, morphine sulfate 10 mg. was administered every four hours for a few days. After seven days of treatment with the constant drip the abdomen became distended and no peristalsis was heard. A diagnosis of intestinal obstruction was made. Suction was applied to the tube in the stomach and 1,900 cc. of greenish yellow fluid was obtained, which reduced the distention slightly. An enema caused the evacuation of a moderate amount of tarry material. Her condition became progressively worse and she died a few hours later.

At necropsy the characteristic changes of arteriosclerotic cardiovascular-renal disease were noted. The heart was slightly enlarged and there were moderate atherosclerotic changes in the arteries. Immediately adjacent to the pyloric sphincter in the duodenum there was an ulcer measuring 3 by 1.2 by 0.4 cm. The jejunum and proximal two thirds of the ileum were distended with gas. Beginning at about the midportion of the ileum, the lumen contained a semisoft putty-like material which in the distal portion became more inspissated, until firm casts of the bowel were formed which caused total obstruction. Immediately distal to the ileocecal valve was a large globular mass of the same material mixed with inspissated blood, approximately 7 by 8 cm., forming a partial cast of the cecum. Lumps of similar material about 2 by 6 cm. in size were present in the remainder of the cecum and transverse colon. Beginning at about the midportion of the transverse colon several hard reddish black masses measuring approximately 2 by 5 cm. were present, and these became larger in the descending colon, sigmoid flexure and rectum.

COMMENT

Reports on the constipating effect of colloidal aluminum hydroxide and the occurrence of fecal impaction following its use are infrequent. The preparation used (amphogel) contains

From the Department of Medicine, Jefferson Medical College Hospital.

1. Kraemer, Manfred: The Use of Hydrated Magnesium Trisilicate in Peptic Ulcer, Am. J. Digest. Dis. 5: 422 (Sept.) 1938.

about 5 per cent aluminum hydroxide, which, combined with the astringent effect produced, may favor constipation, especially when there is blood in the intestine. It is possible that the frequent use of liquid petrolatum and enemas by the vigorous young adult may lessen the danger of this complication, but there appears to be a danger in administering aluminum hydroxide to older or very ill patients, whose energy is depleted and whose intestinal tract may lack normal tonus. As a further precaution, morphine sulfate, because of its alleged depressant action on the bowel, should be used only with caution. It is possible that the gelatin given together with the aluminum hydroxide aided in forming firm masses.

Special Clinical Article

THE SURGICAL ASPECTS OF CARCINOMA OF THE STOMACH

CLINICAL LECTURE AT ST. LOUIS SESSION

ALFRED BROWN, M.D.

OMAHA

Over the seven year period from Jan. 1, 1931, to Jan. 1, 1938, there have been 10,458 deaths from cancer of all forms in the state of Nebraska. The figures for 1938 are not yet available. Of these deaths cancer of the digestive tract and peritoneum furnished 5,519, or a little more than half the total deaths from cancer (table 1). The facilities of our state health department do not enable a complete breakdown of site and organ, but it is reasonable to assume that from one third to one half of the deaths from cancer of the digestive tract and peritoneum are due to cancer of the stomach. This makes approximately 2,000, or one fourth, of the deaths from cancer of all forms due to carcinoma of the stomach. With these facts in mind, it seemed worth while to make a study of the situation regarding cancer of the stomach as we see the disease in the Hospital of the University of Nebraska School of Medicine, as this institution receives patients from the entire state.

In order to evaluate these cases, the histories of all cases of cancer of the stomach in the University Hospital between Jan. 1, 1931, and Jan. 1, 1939, were gone over and classified under headings that were selected to give the best idea of the condition of the patient at the time of admission and discharge. The histories in these cases were taken by first year interns who are serving on a one year general rotating intern service. Consequently the histories are not particularly detailed or directed especially to obtaining symptoms due to disturbance of the gastrointestinal tract and are in no way specialized along this line. They do, however, give interesting information and should be a true comparison with histories which could be elicited by the general practitioner.

There have been eighty cases of cancer of the stomach admitted to the University Hospital during the eight year period and the statistics regarding these cases have been arbitrarily divided into two periods. The first, from Jan. 1, 1931, to Jan. 1, 1936; the second, from Jan. 1, 1936, to Jan. 1, 1939. This arbitrary line was chosen for two reasons: first, because the first division represents a five year period and, second, because 1936 represents the first year in which a patient suitable for resection of the growth in the stomach entered the University Hospital. All the cases in the first five year period were so far advanced that resection was technically impossible.

In the first group there were thirty-two males and nine females, and in this group it will be noted that the greater percentage occurred in the 50-59 year decade (table 2). In the second group there were twenty-five males and fourteen females (table 3). When, however, all cases were classified according to sex it will be noted that the majority of our cases in women occurred during the sixth decade while during the preceding and following decades the number is markedly diminished (table 4). In men the occurrence of the disease is spread over the sixth and seventh decades with a marked falling off toward the earlier decades and a lesser falling off in later years.

In the largest percentage of cases the cancer was in the prepyloric region of the stomach, the lesser curvature was next and the cardia and greater curvature in the smallest percentage of cases.

In the first group, seventeen of forty-one patients complained of premonitory symptoms over periods of from six months to twenty-five years. This period was computed from the time the patients were admitted to the University Hospital and a definite diagnosis of cancer was made.

The premonitory symptoms are shown in table 5 and only those symptoms which were directly referable either to cancer or to some abdominal condition were selected to be included in the summary.

In the second group of thirty-nine patients, thirty-one complained of premonitory symptoms over periods varying from five months to thirty years (table 6). The larger percentage of patients complaining of premonitory symptoms in this group may be due to the fact that the interns were more careful in history taking because, knowing of this investigation, they were more alert in inquiring about gastric symptoms. The type of premonitory symptoms calls attention to the controversy as to whether or not cancer develops on ulcer. This question has in past years divided pathologists into two groups: those who believe that cancer develops on an ulcer base and those who believe the contrary. It is not in the province of the clinician to enter into this discussion from the histologic basis. From the clinical standpoint this investigation shows that of a total series of eighty patients forty-eight, or more than 50 per cent of the patients, complained of definite or indefinite abdominal symptoms over a period of from five months to thirty years. In some of the cases a diagnosis of ulcer of the stomach or duodenum had been made and in some the statement had been made that this ulcer had been cured. Consequently, from the clinical standpoint the active symptoms of carcinoma of the stomach are preceded in many instances by a train of either definite or indefinite abdominal symptoms over a considerable period of months or years preceding the development of cancer itself.

TABLE 1.—*Cancer Deaths in the State of Nebraska*

Year	Cancer (All Forms)	Cancer of Digestive Tract and Peritoneum
1931	1,420	690
1932	1,424	814
1933	1,432	783
1934	1,545	824
1935	1,511	778
1936	1,569	832
1937	1,557	798

Read in the Surgical Division of the General Scientific Meetings at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 16, 1939.

Our results show that the patient with cancer of the stomach who presents the classic symptoms and clinical evidences of the disease at the time of entrance into the hospital usually has a carcinoma so advanced that surgical aid is at the best extremely hazardous and in the great majority of cases any surgical attack is contraindicated.

TABLE 2.—*Sex and Age Incidence in Forty-One Cases of Carcinoma of the Stomach, Jan. 1, 1931, to Jan. 1, 1936*

Males	32 cases
Females	9 cases
Youngest patient	37 years
Oldest patient	81 years
By decades:	
30 to 39 years	1 case
40 to 49 years	7 cases
50 to 59 years	17 cases
60 to 69 years	11 cases
70 to 79 years	4 cases
80 years and over	1 case

In the first five year series of forty-one cases we were unable to find any case suitable for radical resection of the carcinoma.

In the second group, of thirty-nine cases over a period of three years, radical operation was performed on seven patients. One of these patients was still living ten days ago:

A man aged 74 had had abdominal pain off and on for thirty years and entered the hospital because he had had nausea accompanied by vomiting of everything he ate for six weeks and during this period had been bedridden. During his period of bed confinement he had lost between 15 and 20 pounds (7 to 9 Kg.). He had only a moderate grade of anemia, with 80 per cent hemoglobin. He had some free hydrochloric acid in the last three specimens of the fractional gastric test. He had a palpable mass in the abdomen, and at operation what was thought to be an annular carcinoma of the prepyloric region was found. A Billroth I operation was performed. The operation was complicated by a parotitis which did not require surgical drainage and he was discharged from the hospital after a six weeks stay. A report from his physician states that on May 6, 1939, he weighed 146 pounds (66 Kg.), a gain of 16 pounds (7 Kg.) over his hospital admission weight. At the present time he has occasional attacks of abdominal cramps which yield to digestive remedies.

TABLE 3.—*Sex and Age Incidence in Thirty-Nine Cases of Carcinoma of the Stomach, Jan. 1, 1936, to Jan. 1, 1939*

Males	25 cases
Females	14 cases
Youngest patient	14 years
Oldest patient	79 years
By decades:	
10 to 19 years	1 case
40 to 49 years	2 cases
50 to 59 years	14 cases
60 to 69 years	11 cases
70 to 79 years	11 cases

Unfortunately, the specimen removed from this patient was lost and a histologic examination was not made. It must, therefore, remain a question as to whether this was actual cancer or callous ulcer without malignant change. The other surgical patients all died within a year and there were three postoperative deaths in periods of from three to ten days following operation.

One other case appeared to be suitable for resection but operation was refused. In six cases exploratory operation was performed and an inoperable carcinoma found. In two cases gastro-enterostomy was performed and death occurred in one three months after operation; the other has not been traced. Consequently the result of surgery in these eighty cases reveals one patient alive and apparently well ten months after operation, and there is some doubt whether this patient had a carcinoma.

METHODS OF TREATMENT

The operations performed in these cases were different types of procedure and were directed toward the mechanical condition of the carcinoma when examined with the abdomen open. In one case the lesion was thought to be benign at the time of operation and a gastro-enterostomy was performed for what was considered to be a prepyloric ulcer. A resection was not performed at the time because of the poor condition of the patient but examination of the specimen showed definite adenocarcinoma. After a further period of preparation a resection of the pylorus was performed and the patient lived for eight months. Autopsy showed metastatic carcinoma of the liver. In two cases the Billroth I operation was performed. One of these patients died from peritonitis six days after operation. Autopsy showed an unsuspected Krukenberg tumor of the ovary, with peritonitis due to perforation at the site of operation. In the remaining cases subtotal gastrectomy of the Polya type was performed. The longest period of life after this operation was nine months. During this period the patient had had practically no gastric symptoms. He had gained weight but succumbed to kidney complication following acute prostatic obstruction for which he refused operative relief. He died at his home in the western part of the state and an autopsy was not obtained.

TABLE 4.—*Sex and Age Incidence in Eighty Cases of Carcinoma of the Stomach, Jan. 1, 1931, to Jan. 1, 1939*

Males	57 cases	Females	23 cases
Youngest patient	37 years	Youngest patient	14 years
Oldest patient	79 years	Oldest patient	81 years
By decades:		By decades:	
30 to 39 years	1 case	10 to 19 years	1 case
40 to 49 years	5 cases	40 to 49 years	4 cases
50 to 59 years	21 cases	50 to 59 years	10 cases
60 to 69 years	18 cases	60 to 69 years	4 cases
70 to 79 years	12 cases	70 to 79 years	3 cases
		80 years and over	1 case

A prominent symptom in the great majority of these cases in which blood examinations are available has been a grade of anemia which could not be accounted for on the basis of hemorrhage. This finding has been so constant that the presence of a marked anemia in a middle aged person without definite cause should call attention to the stomach as a point of attack for detailed investigation. Other symptoms studied—pain, loss of weight, absence of free hydrochloric acid and the appearance of occult blood in the stools—have been present in this series of cases in the same proportion as in other series.

A study of the observations in this series of cases raises the question whether the medical treatment of gastric ulcer is justified from the fourth decade of life on. Every patient is entitled to one attempt at medical cure of gastric ulcer. A recurrence of symptoms of ulcer after one medical regimen should raise the question as to the advisability of surgical exploration. If surgical exploration is carried out and a prepyloric

ulcer found it should be removed if technically possible in preference to the performance of a palliative drainage operation. We have a specimen in our laboratory of the development of carcinoma in the base of a healed ulcer. We have many specimens of carcinoma developed on ulcer. Consequently it still remains a question

TABLE 5.—*Premonitory Symptoms in Seventeen of Forty-One Cases, Jan. 1, 1931, to Jan. 1, 1936*

No.	Age	Sex	Character of Symptom
3	58	♀	Acanthosis nigricans
4	50	♂	Indigestion for 25 years
5	37	♂	Ulcer 4 years ago cured (?) 2 years
7	47	♀	Intestinal "flu" 6 months ago
8	42	♂	Ulcer for 4 years
9	53	♂	Ulcer for 18 months
10	55	♀	Stomach distress for 12 years
11	62	♂	Stomach trouble for 20 years
12	52	♂	Epigastric discomfort 2 years
16	42	♂	Intestinal "flu" for 1 week 5 months ago
21	53	♂	Heaviness in stomach 5 years ago
30	50	♀	Weakness, abdominal pain, sore tongue for 5 years
31	41	♂	Stomach trouble for 5 years
32	49	♂	Abdominal pain and jaundice 3 years ago, lasting 6 weeks
34	52	♀	Occasional stomach upset
37	59	♂ Col.	Dizzy, nauseated one year
38	64	♂	Weakness and fatigue 10 months ago

whether ulcer remaining in the stomach, even though it gives no symptoms, may not be a source of potential danger to the patient.

The type of operation performed should be the one most suitable to the type of ulcer encountered at operation. As an illustration I cite two cases which are my oldest living examples of patients in the cancer age whom I have recently followed up.

A woman, married, a school teacher, 52 years of age at the first admission, who was admitted to the hospital Aug. 14, 1926, at that time complained of indigestion, ushered in with an attack of intense nausea three years previously. A few months after the onset she complained of severe pain of the hunger type. She entered the hospital for Sippy treatment. On admission, free hydrochloric acid was 67, total 93. On discharge, free hydrochloric acid was 45, total 59. She had occult blood in her stool on two examinations, none for the remainder of her stay. She was discharged seventeen days after admission in an improved condition. She reentered the hospital Aug. 12, 1927, with the history that after leaving the hospital she felt much better. She had a gastric hemorrhage in the spring of 1927 followed by tarry stools. She had been on a diet for four years and she thought that these attacks were brought on by worry. Blood examination revealed 4,580,000 erythrocytes, 10,200 leukocytes, hemoglobin 79 per cent. A fractional gastric analysis showed an increase in free hydrochloric acid. The stool showed constant occult blood varying from 2 to 4 plus. X-ray examination showed an ulcer of the perforating type in the middle third of the lesser curvature of the stomach. The duodenal cap was deformed by scars resulting from old ulcers. August 22, a V shaped resection of the lesser curvature of the stomach including an ulcer of the perforating type about 1 inch by 1 inch in size was performed. Following operation the patient developed bilateral suppurative parotitis necessitating opening of both parotid glands. She finally made a good recovery and was discharged Oct. 12, 1927. She reentered the hospital Dec. 21, 1929, with the symptoms of hyperthyroidism. The goiter was removed by subtotal thyroidectomy and she made an uneventful convalescence. So far as gastric symptoms are concerned, she remains well today and carries on her work as a teacher. It is now eleven years and nine months after her gastric operation. A roentgenogram of the patient's stomach taken one year ago shows a markedly shortened lesser curvature, but it is apparently functioning sufficiently well to carry on normal digestion. It is to be noted that this was an ulcer in a woman in the sixth decade of life, at the time when most carcinoma develops. No evidence of carcinoma, however, was present in the ulcer removed at operation and no glandular enlargement was demonstrable.

A man aged 61 at the time he was first seen in June 1930, married and an educator, complained of severe pain in the epigastrium coming on in attacks which simulated gallbladder colic. X-ray examination showed no shadow of the gallbladder with the Graham Cole test, and the gastrointestinal tract appeared to be normal. Temperature, pulse and respirations were normal. The heart and lungs were normal. There was moderate tenderness in the epigastrium. No respiratory catch occurred on inspiration, and no masses were felt in the abdomen. In June 1930 he was operated on. The gallbladder was found to be normal with no adhesions. There were dense adhesions between the hepatic flexure and the liver. Beneath these the great omentum was plastered to the upper surface of the pylorus and the under surface of the liver. Beneath these there was an area on the prepyloric surface of the stomach, one-half inch in diameter, surrounded by an area of redness and infiltration. Palpation through the stomach wall revealed the crater of an ulcer in the area of redness. In the gastrohepatic omentum was a lymph gland, intensely hard and about the size of a buck shot. Under local anesthesia a "Finney" pyloroplasty, including the ulcer and a considerable area around it in the incision, was performed. The lymph gland was also excised. From all indications this appeared to be a case of prepyloric ulcer but the pathologic examination showed in the sections of the ulcer "evident induration which was the result of dense overgrowth of connective tissue, everywhere diffusely, and near the surface focally, infiltrated with leukocytes. There was no evidence of epithelial infiltration, and the gastric mucosa on each side of the ulcerated area appeared normal. The lymph gland told another story; despite its small size it showed the presence of numerous masses of undelimited epithelial cells, in part with a fairly definite tubular arrangement, in part as utterly unformed groups. Despite the negative evidence of the sections directly through the ulcer there was undoubtedly carcinomatous change somewhere in the ulcer." This patient is still living at the age of 70 and still carrying on his work as an educator. His stomach, as that of the previous patient, showed considerable deformity at the pyloric region on x-ray examination one year ago, but it is functioning sufficiently well to carry on approximately normal gastric digestion.

TABLE 6.—*Premonitory Symptoms in Thirty-One of Thirty-Nine Cases, Jan. 1, 1936, to Jan. 1, 1939*

No.	Age	Sex	Character of Symptom
1	65	♂	Dull ache 1 year
2	54	♂	Lumbosacral pain, 5 months
3	50	♀	Nausea and pain, 17 months
4	70	♂	Operation for stomach trouble 8 months ago
6	71	♂	Sickness 3 years
7	50	♀	Nausea and vomiting, 5 months
8	52	♀	Right upper abdominal pain, 4 years
9	69	♀	Peptic ulcer 10 years ago
11	77	♀	Indigestion 17 years
12	52	♂	Bloating and belching 3 years
15	70	♂	Nausea 2 years
16	63	♂	Gas on stomach 6 months
17	64	♂	Distress 1 year
18	72	♂	Weakness 7 months
19	79	♂	Pain 7 months, relieved by eating
21	65	♂	Indigestion 5 years
22	65	♂	Diarrhea 16 months
23	42	♀	Pain 4 years
24	70	♀	Palpitation 2 years
25	45	♀	Vomiting and distress 1 year
26	59	♂	Sore spot in stomach 20 years
27	58	♀	Cholecystectomy 5 to 6 years ago; pain not relieved
28	69	♂	Dyspepsia 20 years
29	68	♀	Weakness past several years
31	73	♂	Vomiting, pain, loss of weight 4 months
32	60	♀	Weakness, loss of weight, 6 months
33	53	♂	Weakness 18 months
34	52	♂	Pain and weakness 4 years
36	74	♂	Abdominal pain 30 years
37	73	♂	Ulcer pain 13 years
38	55	♀	Weakness, loss of weight, 1 year

The point brought out by the three cases I have cited is that even with the abdomen open and the stomach accessible to sight and feel it is extremely difficult to differentiate between benign gastric ulcer and early carcinoma. For this reason I advocate the removal of prepyloric ulcer, in whatever portion of the stomach it is situated, by the method applicable to the individual case with or without gastric drainage by gastro-enterostomy. In the early stage, with the patient in good condition, the operation does not carry a high mortality and removal of the ulcer and the surrounding area is radicalism on the side of safety.

CONCLUSIONS

The development of surgery initiated by the discovery of anesthesia and asepsis has passed through two definite phases and we should now be entering on its third phase.

The first phase was that of anatomic surgery. The attention of surgeons was directed toward developing methods of attack on the different organs of the body. During this phase the various operations were devised and surgical thought was directed almost exclusively to anatomic and mechanical methods.

The second phase was ushered in by the increase in the knowledge of bacteriology and biochemistry. The condition of the patient's body was more carefully evaluated, and preoperative and postoperative care of the patient as a whole was taken into consideration. The physiology of the different organs of the body was studied and surgical attack directed toward conditions which were previously out of reach because of the inability of the unprepared patient to stand the shock of surgical attack.

The third phase, into which we are now entering, is the phase of preventive surgery. The great mass of evidence accumulated over the past three quarters of a century has shown definite conditions amenable to surgical attack which we know, if left alone, will result in serious disability, if not death, in a moderately short time. In this group can be placed thyroid disease, which tends constantly to become more and more severe. Gallbladder disease, which tends to create economic inefficiency in later life, also may be included. The wisdom of surgical removal of the various so-called precancerous conditions is now recognized. It would appear from the evidence offered by this study, as well as by that offered by others, that gastric ulcer belongs to this group if we are to succeed in the surgical cure of cancer of the stomach.

Cancer of the stomach sufficiently advanced that a definite diagnosis of cancer can be made is, as shown by this series and series reported by others, a condition which is practically incurable by surgical treatment. Recurrences are common. In many cases metastases exist which cannot be recognized at operation. At best, in the advanced case, operation gives the patient only a few more months of life. In the majority of cases life is made more comfortable and consequently operation is justified.

The accepted method of cure, if the word can be used of carcinoma of any form, is the early removal of the growth itself with the removal of adjacent lymph glands. From the standpoint of the surgeon the treatment of carcinoma of the stomach consists in the removal of gastric lesions which we know may result in carcinoma during the stage when, if carcinoma is already present, it is in an early stage and localized in the stomach and adjacent glands.

1618 Medical Arts Building.

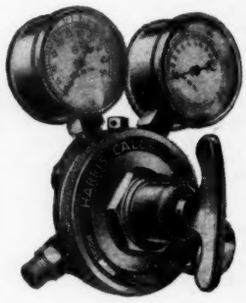
Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

HARRIS OXYGEN REGULATORS, No. 92SC ACCEPTABLE

Manufacturer: The Harris Calorific Company, 5505 Cass Avenue N.W., Cleveland.

The Harris Oxygen Regulator, No. 92SC, is used to meter the flow of oxygen into tents, catheters, anesthesia apparatus or similar oxygen therapy chambers. It is a two-stage regulator, which is designed, in contradistinction to single-stage regulators, to reduce pressure in two steps.



Harris Oxygen Regulators #92SC.

The firm claims that this type of apparatus is more efficient than a single-stage regulator, in which the high pressures encountered in the oxygen cylinders are both held and controlled at one point, namely where the nozzle meets the seat. It is stated that this dual function cannot be efficiently maintained by one such control. That is, in the two-stage mechanism a more steady and rigid means may be provided to "hold" the pressure by means of a separate first stage, and a more accurate and stable control is made possible by the presence of a second stage. The first is achieved by a metallic diaphragm set to hold the pressures roughly at from 150 to 200 pounds. Gas at this pressure is then led into the second stage, where a flexible diaphragm functions in connection with a seat to regulate the gas more accurately. Furthermore, it is said that this second stage diaphragm is so made that no harm would ensue if a nurse should inadvertently leave the second stage seat open and then open the valve on the oxygen cylinder, allowing 2,000 pounds of gas pressure to rush directly onto the more delicate second stage diaphragm.

In this unit there is also a screen through which gas entering the regulator is subjected to filtering prior to entering the high pressure gage and the seat. A safety valve has been provided to vent to the atmosphere undesirably high gas pressures. The noise of the operation of the unit has also been reduced to a minimum.

The firm submitted tests made in its engineering department to substantiate claims that the regulator will hold and accurately control 2,000 down to 100 pounds pressure. The delivery per minute was set at 20, and the results were as follows:

Oxygen Cylinder Pressure Lbs. per Sq. In.	Delivery Liters per Minute
2,000	10
1,800	10
1,600	9.9
1,400	9.8
1,200	9.7
1,000	9.6
800	9.5
600	9.4
400	9.5
300	9.7
200	10.1
150	10.5
100	10.8

Evidence obtained by the Council for the clinical value of the unit demonstrated that it performed adequately and in accordance with the claims of the firm.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Harris Oxygen Regulators, No. 92SC, for inclusion on the Council's list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
PAUL NICHOLAS LEECH, Secretary.

BISMUTH ETHYL CAMPHORATE (UPJOHN COMPANY)

Preliminary Report of the Council on Pharmacy and Chemistry

The Upjohn Company presented for the Council's consideration, Bismuth Ethyl Camphorate, stated to be a liposoluble bismuth salt of ethyl camphoric acid having the formula $(C_8H_{11}.COOC_2H_5.COO)_3Bi$. The preparation is proposed for intramuscular injection to obtain the systemic effects of bismuth in the treatment of syphilis. The proposed adult dose is 1 cc. by intramuscular injection for a course of twelve injections. The firm states that the drug is usually administered in courses alternating with arsenic preparations. It is marketed in ampules of 1 cc. and vials of 30 cc., each cubic centimeter containing 40 mg. of elemental bismuth, 0.010 Gm. of camphor and 0.025 cc. of benzyl alcohol dissolved in sweet almond oil. These dosage forms have not been checked by the Chemical Laboratory of the American Medical Association.

The Upjohn Company submitted evidence to show that the minimum lethal dose for the bismuth-methyl-camphorate was 350 mg. of metallic bismuth per kilogram of rat, while that for bismuth-ethyl-camphorate was 250 mg. of metallic bismuth per kilogram of rat.

The firm submitted a reprint entitled "Bismuth Ethyl Camphorate, clinical observations on a new oil soluble bismuth in the treatment of syphilis," by Francis M. Thurmon representing work done in the Department of Dermatology and Syphilology and the Division of Research of the Boston Dispensary. The statement is made that oil soluble preparations possess an optimum rate of absorption and elimination and a superior ability to penetrate the tissues. No proof for this statement is given. Investigation included 230 patients who received 2,444 intramuscular injections, extending over a period of eighteen months. There were nineteen patients with primary lesions, thirty-six with secondary, ninety-one with tertiary asymptomatic, sixty-three with tertiary symptomatic, and twenty-one with congenital syphilis. There were 146 males and eighty-four females (of the latter fourteen were pregnant). Each patient had frequent chemical and microscopic studies of the urine. Occasionally phenolsulfonphthalein excretion tests were used, and determinations of the nonprotein nitrogen and urea content of the blood were carried out. Likewise, complete blood counts, icteric index and like tests were made in numerous instances. In these tests no significant variations from normal were observed which might be attributed to Bismuth Ethyl Camphorate. It was found that the patients best tolerated the 1 cc. dose of the compound given intramuscularly. Higher doses of 1.5 cc. and 2 cc. were well tolerated by some patients, while others manifested local pain, gingivitis, occasionally a mild dermatitis, and seldom evidence of a transient renal irritation.

The technic employed in the foregoing clinical study consisted, in early syphilis, in each patient receiving three injections of an arsphenamine for the first two weeks, two injections a week for the next two weeks and one injection a week for the succeeding two weeks, so that at the end of the first six weeks of treatment each patient had received twelve intravenous injections. Then without a rest period intramuscular therapy was instituted, the patients receiving an injection of bismuth ethyl camphorate at seven day intervals for a total of twelve injections. Following this the patient was once more put back on the arsenical therapy, and this continuous alternation of courses was kept up until the patient had received thirty-six injections each of an arsenical and of a bismuth preparation. The seventy-two injections were considered the minimum therapy for any patient with primary or secondary syphilis.

The author states that occasionally prolonged treatment with bismuth ethyl camphorate was necessary because of sensitivity to other preparations, so that twenty-one patients received from fifteen to twenty consecutive injections, and another group of fifteen patients received from twenty to twenty-five injections without toxic effect. One patient, a man aged 20, sensitive to all arsenicals, developed an acute interstitial keratitis, for which he received twenty-nine consecutive injections without toxic effect and with a clearing of the eye situation in six weeks. In fourteen cases of pregnancy, five of them in the secondary stage in which it was possible to administer treatment through the last five months of pregnancy, each of the patients produced a full-term child without stigmas of congenital syphilis.

The firm submitted a table comparing the toxic effects of bismuth ethyl camphorate with that of bismuth subsalicylate. According to this table, if anything, more toxic effects were noted from bismuth subsalicylate than from bismuth ethyl camphorate, there being a comparison of 230 cases under the bismuth ethyl camphorate, with 180 under the bismuth subsalicylate. As to local irritation from the preparation, in only eight instances of the 230 was it necessary to transfer the patient to some other form of treatment. It is stated that during the early period of the study when larger amounts of the drug, from 60 to 80 mg., were used, the drug seemed to possess potential possibilities of toxicity. Later and more complete evidence would indicate that Bismuth Ethyl Camphorate can be used in 2 cc. (80 mg.) doses, as are other liposoluble compounds on the market, though one consultant reports that some of the patients under such a regimen develop a bismuth line within a matter of two or three weeks. Otherwise there seems to be no reason why a 2 cc. dose should not be considered safe.

No studies were submitted on the absorption and elimination of this product. Evidence is presented to show that it is impossible by means of x-ray examination to study the rapidity of absorption of Bismuth Ethyl Camphorate when administered intramuscularly. The x-ray films show no evidence of any opaque material.

The Upjohn Company was informed that the Council has already gone on record as being opposed to development of further bismuth preparations for the treatment of syphilis unless they represent something new and of an unusual type. Bismuth ethyl camphorate can hardly be called a new or unusual type of preparation. Sufficient data are not furnished to allow proper evaluation of the effectiveness of this product in the treatment of syphilis. Studies on the absorption and elimination of the preparation in human subjects are lacking. Some data are furnished on animals. It is understand that the investigation of the former is in progress. For one of the first requisites to evaluation of an antisyphilitic preparation, the rapidity of disappearance of spirochetes from primary and secondary lesions, insufficient data are at hand. Thus far they consist of but one case of Dr. Carroll Wright's, in which the spirochetes disappeared from a penile chancre in approximately sixty hours, and eight cases submitted by Dr. Francis Thurmon, the spirochetes disappearing from the primary lesions in one, two and three days respectively, and from secondary lesions, several of them being extensive condylomas, in extremes of two and fourteen days, with a mean of thirteen days. In view of the lack of sufficient data to warrant inclusion in N. N. R. at this time, the Council authorized publication of the foregoing preliminary report.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.
PAUL NICHOLAS LEECH, Secretary.

SULFANILAMIDE (See New and Nonofficial Remedies, 1939, p. 463).

Tablets Sulfanilamide, 5 grains.
Prepared by Smith-Dorsey Co., Inc., Lincoln, Neb. No U. S. patent or trademark.

IMMUNE GLOBULIN (HUMAN) (See New and Nonofficial Remedies, 1939, p. 412; THE JOURNAL, April 1, 1939, p. 1257).

The National Drug Co., Philadelphia.

Immune Globulin (Human).—Also marketed in packages of one 2 cc. ampule-vial and in packages of one 10 cc. ampule-vial.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 21, 1939

HEAD INJURIES

In recent years two dominant influences have prevailed in the treatment of trauma to the brain. The first is the demonstration of the four classic stages of brain compression by Kocher and Cushing. The second is the observation of Weed and his collaborators that increased intracranial tension can be influenced by changing the osmotic pressure of the blood through the agency of hypertonic and hypotonic solutions. The treatment of cerebral injuries has been designed also on the concept that cerebral compression is the prime factor in the production of the symptoms. The application has resulted in treatment by cerebral decompression—by lumbar puncture and by dehydration. Thus Battle,[1] after a recent study of 200 cases of traumatic injuries of the head, has reported that the lowest mortality in the seriously injured occurred in the cases treated by repeated lumbar punctures and dehydration.

Now, however, comes evidence that the postulates on which therapy has rested are neither wholly complete nor wholly accurate. Shapiro and Jackson,[2] for example, in studies of normal human brains and those which had suffered traumatic injury, found that in the traumatized head the brain is swollen but not edematous. This swelling is not due to increased water but to increased blood content, although the ventricular fluid is increased in the presence of internal traumatic hydrocephalus. The lines of therapeutic effort suggested by their study show, these investigators believe, that lumbar puncture and dehydration are indeed indicated but have probably been carried as far as possible. Ventricular drainage may be useful but emphasis may be placed on measures to reduce parenchymatous hemorrhage within the brain substance. Similarly, Browder and Meyers[3] have previously expressed inability to interpret clinically the altered brain functions of many traumatic cases in terms of the classic teachings. This led to their investigation of the behavior of the blood pressure, pulse, respiration, state of consciousness and cerebrospinal fluid pressure following craniocerebral injury. Measurably increased intracranial tension rarely, however, produced the classic pattern of signs; they therefore expressed the conviction that, whether singly or in combination, the blood pressure, pulse rate, respiratory rate and state of consciousness cannot be reliably regarded as an index of intracranial tension. Three lines of evidence concerning the factor of cerebral compression—that derived from observations on the behavior of the systemic blood pressure, pulse and spinal fluid pressure following craniocerebral injury; that from alterations in vital signs associated with changes in intracranial tension experimentally produced by an external pressure agent, and that from the alterations in vital signs associated with changes in intracranial tension experimentally produced by the application of an intraventricular pressure agent—lend strong support to the view that the changes in the constitutional, neurologic and psychologic states of patients showing evidence of severe trauma of the brain are not applicable in terms of increased intracranial tension per se.

Their extensive experiments on this problem[4] involved also observations on the effects of various hypertonic solutions on the intracranial tension as measured by the cerebrospinal fluid pressure and aerographic roentgenologic studies of the head in relatively new injuries demanding prompt and precise diagnosis as a basis for therapy. All these observations point to the conclusion that the traditional account of the manifestations of craniocerebral trauma in terms of brain compression cannot be reconciled in the majority of cases with the data derived from clinical, pathologic and experimental investigations. The evidence available rather indicates the necessity of experimental inquiry into the nature of the more subtle pathologic intracerebral disturbances, particularly of the derangements of the physiochemical constitution of nerve cells and their processes. Until precise knowledge along such lines is acquired, Browder and Meyers say, bringing with it an understanding of the pathogenesis of the majority of severe cerebral injuries comparable to that at present possessed in connection with epidural, subdural and intracerebral hemorrhages, just so long will treatment remain empiric. The proper management of a head injury, they say, requires the clinician to determine whether or not there are present any lesions such as depressed fractures of the vault and epidural, subdural or intracerebral hematomas. These alone are benefited by surgical procedures. Other pathologic processes call for the institution of supportive measures. Differential diagnosis is often rendered difficult by the frequent coexistence of generalized cerebral insult with

1. Battle, Newsom P.: Traumatic Injuries to the Head, Am. J. Surg. **43**: 66 (Jan.) 1939.

2. Shapiro, Philip, and Jackson, Harry: Swelling of the Brain in Cases of Injury to the Head, Arch. Surg. **38**: 443 (March) 1939.

3. Browder, Jefferson, and Meyers, Russel: Observations on Behavior of the Systemic Blood Pressure, Pulse and Spinal Fluid Pressure Following Craniocerebral Injury, Am. J. Surg. **31**: 403 (March) 1936.

4. Browder, Jefferson, and Meyers, Russel: A Revaluation of the Treatment of Head Injuries, Ann. Surg. **110**: 357 (Sept.) 1939.

surgically amenable conditions. In such cases cerebral aerography may help to clarify the diagnosis. Certainly the severe traumatic head injuries still constitute a sufficiently dangerous group to necessitate extensive further studies on the pathophysiology in order to furnish a foundation on which to base more rational and effective therapy than is at present available.

POTASSIUM IN MUSCLE

The concentration of the electrolytes in the various tissues of the body is maintained by a variety of intricate mechanisms, not all of which are well understood. The electrolytes of muscle, in particular, have attracted much attention; the extensive literature covering research studies made in this field was recently reviewed by Fenn.[1] The important observations of numerous investigators which give evidence that under certain conditions muscles lose potassium on stimulation have made studies concerning this element of special interest. A recent investigation by Heppel,[2] who used potassium deficient rations, is noteworthy because it adds to our knowledge of the interrelations of potassium and sodium in muscle. Restriction of rats to such an experimental diet results in a striking alteration in the potassium and sodium content of their muscular tissues. As compared to normal animals, those deprived of potassium show a decrease of almost 50 per cent in the potassium of muscle and a concomitant rise in the level of sodium; indeed, in some cases the muscles become richer in sodium than in potassium. Particularly worthy of note is the observation that in the muscles of the deficient animals most of the sodium is confined to the intracellular phase, whereas it is known that in the muscles of normal rats almost all the muscle sodium can be assigned to the extracellular space. It might be recalled here that Eppright and Smith,[3] in a study of the changes in the water of tissue induced by diets containing various mineral supplements, also reported the probable occurrence of intracellular sodium in the muscles of rats under a particular dietary regimen.

Although the livers of rats deprived of potassium examined by Heppel showed no large changes in the electrolyte picture, the possible importance of the liver in the potassium economy of the body is suggested by the recent work of Fenn.[4] He has reported the results of an extensive study which was carried out to determine the fate of potassium liberated from muscles during activity. His observations indicate that the liver is involved in a manner not suspected heretofore. The blood, muscles and other tissues of cats were analyzed for water and potassium before and after stimulation of certain muscles. The data show that one hour after stimulation the increase in potassium concentration in the blood is such as to indicate that more than half of this element is no longer located in the interstitial or circulatory fluids but must have penetrated into some cells of the body. Analysis of the liver indicates that this organ takes up 31 per cent of the potassium liberated from active muscles, although it accounts for less than 3 per cent of the body water.

The experiments would seem to indicate that a part of the potassium liberated by muscular activity is taken up by the liver; in recovery the reverse change occurs, since it has been shown that the muscle regains the potassium which it has lost. Thus there are indications of a potassium cycle that is somewhat comparable to the classic carbohydrate cycle, the potassium being possibly transported as potassium lactate. As recognized by Fenn, additional evidence is needed before the existence of such a cycle can be stressed. However, if further work proves that this cycle exists, the importance of the discovery to our knowledge of tissue electrolytes is evident. The involvement of the liver in the cycle would also serve to emphasize once more the manifold function of this organ in metabolism.

1. Fenn, W. O.: Physiol. Rev. **16**: 450 (July) 1936.
2. Heppel, L. A.: Am. J. Physiol. **127**: 385 (Sept.) 1939.
3. Eppright, E. S., and Smith, A. H.: Am. J. Physiol. **121**: 379 (Feb.) 1938; J. Biol. Chem. **118**: 679 (May) 1937.
4. Fenn, W. O.: Am. J. Physiol. **127**: 356 (Sept.) 1939.

HEMOCONCENTRATION AS A DIAGNOSTIC SIGN OF SHOCK

Observations on shock during the World War seemed to show that substances absorbed from injured tissues were responsible for the circulatory failure which followed. The British Medical Research Council organized an investigation on the nature and appropriate treatment of shock. Eminent surgeons, physiologists and pharmacologists of England, France and the United States cooperated in this endeavor. The accumulated experience and experimental evidence, summarized by Cannon, indicated that secondary shock is due to a toxic factor absorbed from injured tissues which causes an increase in permeability of the capillary walls and a consequent reduction in blood volume through the escape of plasma into the tissues. In a large series of cases of hemorrhage and of shock in which hemorrhage was insignificant, Cannon, Fraser and Hooper[1] found that the blood showed dilution in the former proportional to the amount of blood lost, while in the latter there was concentration of the blood. The first noteworthy feature in severe traumatic shock was a high red cell count. These investigators attributed this phenomenon to stasis of blood in capillary areas, accompanied by transudation of the plasma into the tissue spaces, with resulting concentration of the corpuscular elements of the blood. The hemoconcentration was progressive and tended to be proportional to the degree of shock.

1. Cannon, W. B.; Fraser, John, and Hooper, A. N.: Some Alterations in the Distribution and Character of the Blood, J. A. M. A. **70**: 526 (Feb. 23) 1918.

Knowledge concerning the function and reactions of the capillaries has been extended since the World War. It has been shown (Ebbecke,[2] Lewis [3]) that normal cytoplasmic substance, released from cells by injury of any kind, causes dilatation and increased permeability of capillary endothelium. Cytoplasm is not toxic in the sense commonly implied by that term. According to Moon,[4] secondary shock is the result of capillary atony caused by many agents, such as cytoplasmic substances, anoxia, certain chemicals, metabolites and various protein substances. The phenomena which accompany capillary atony are hemoconcentration, dilatation, stasis and permeability of capillary endothelium. These result in a decrease in both the actual and the effective blood volume. The volume flow is thereby reduced and deficient delivery of oxygen causes tissue anoxia. Capillary dilatation combined with loss of plasma volume causes disparity between the volume of blood and the volume capacity of the vascular system. For a time arterial constriction will compensate this disparity. This compensation is at the expense of volume flow. The peripheral parts become relatively bloodless and vital organs suffer lack of oxygen. When this mechanism of compensation is no longer effective, the blood pressure declines progressively. At this stage the condition is usually irreversible.

Moon and his associates claim that shock is accompanied regularly by hemoconcentration, and they have adopted hemoconcentration as a criterion rather than changes in blood pressure. They produced shock in dogs without hemorrhage or trauma by introducing muscle substance intraperitoneally, by injecting extracts of tissue, by injecting bile and by other procedures. Hemoconcentration was a regular feature in all the experiments, sometimes developing within an hour after implantation of muscle. It occurred before the arterial blood pressure began to decline and was progressive. The degree of concentration was proportional to the apparent illness of the animal. A condition of collapse, relaxation and stupor preceded death.

Moon and his associates found that hemoconcentration develops gradually after severe trauma, operations, intestinal obstructions and burns but that it results immediately after the injection of bile, peptone, histamine, emetine and other substances which cause damage to endothelium. A rise from 5,000,000 to 6,000,000 red cells represents a concentration of 20 per cent. Such a result, according to Moon, indicates that the total blood volume has been reduced about 10 per cent and the plasma volume about 20 per cent. A hemoconcentration of 20 per cent is ominous, for it indicates that the mechanism of shock is in operation even though no decline in arterial pressure or other evidence of circulatory deficiency is shown.

Moon [5] points out that hemorrhage and shock may be differentiated readily by observations made on the concentration of the blood. A loss of blood by hemorrhage results in dilution of the blood because fluid is absorbed rapidly from the tissues to restore the blood to its normal volume. The hemodilution is proportional to the amount of blood lost. Moon compared the hemoconcentration with blood pressure readings in a number of clinical cases during the development of circulatory deficiencies of the shock type. In each instance, examination of the blood forecast the development of the shock from several hours to several days before the blood pressure declined notably. He therefore concluded that arterial blood pressure is not an accurate criterion of the presence of shock. The latter may be present while the blood pressure is well maintained or when it is even at its highest recorded point. Hemoconcentration is progressive; it is an index of the degree of shock, and it subsides to normal as shock is abated. Hemoconcentration is therefore offered as the earliest clinical sign of shock. It is easily detected, is regularly present before other signs appear and results from the same mechanism that causes shock.

Current Comment

MASSACHUSETTS COMES CLEAN

At long last the Commonwealth of Massachusetts has taken measures for the protection of its citizens in medical affairs comparable to those of other states. For years the output of graduates of low grade medical schools unable to obtain licenses in any other state has flocked to Massachusetts. Two such schools not recognized in any other state have flourished almost under the shadow of the State House. In theory people were protected by the licensing examination; it is well known, however, that competence to practice medicine cannot be determined by a written examination alone. A written examination might as well be expected to test ability to paint a picture or to shoe a horse. The state has provided no machinery for a practical examination, which is the only kind of examination worth while in ascertaining fitness for medical practice. Now, however, by the Acts of April 30, 1936, and May 2, 1938, amending section two of chapter 112 of the General Laws, it has been decreed that no one may enter the licensing examination who is not a graduate of an "approved" medical school. There has also been created an "Approving Authority" which is to determine on request whether any medical school fulfils the requirements formulated and published by it. The way is now clear to enforce a standard for admission to the practice of medicine at least as high as the standards prevailing generally throughout the United States. After 1941 Massachusetts should cease to be the dumping ground of unqualified practitioners.

2. Ebbecke, Ulrich: Ueber Gewebsreizung und Gefässreaktion, Arch. f. d. ges. Physiol. **199:** 197, 1923.

3. Lewis, Thomas: Blood Vessels of the Human Skin and Their Responses, London, Shaw & Sons, 1927.

4. Moon, V. H.: Shock and Related Capillary Phenomena, New York, Oxford Press, 1938.

5. Moon, V. H.: Early Recognition of Shock and its Differentiation from Hemorrhage, Ann. Surg. **110:** 260 (Aug.) 1939.

SUPPLY OF OPIUM IN THE UNITED STATES

According to official reports, opium and its derivatives are now available in the United States in quantities sufficient to meet legitimate medicinal requirements for about three years. Disturbed conditions in Europe and the Orient afford, therefore, no justification for purchasing and hoarding supplies of these drugs, either by physicians, hospitals, wholesale druggists or pharmacists. Narcotic pedlers, however, who cater unlawfully to addicts, seem to feel already the pinch of restricted transoceanic commerce. The importation of opium and its derivatives by international smugglers apparently has diminished along with the number of vessels engaged in transoceanic commerce. The increasing difficulty of obtaining narcotics to satisfy the demands of addicts probably accounts for the increase in the number of thefts of narcotics from physicians' offices and from pharmacies. Addicts and pedlers who cater to them are likely to resort with increasing frequency to this method of replenishing their stocks. Physicians, pharmacists and institutions who may legitimately possess narcotic drugs should take extra precautions to prevent their being stolen. Access to such drugs should be limited to the smallest possible number of persons. In event of theft of narcotics, the person from whom they were stolen should make immediate report in writing to the local police and also to the narcotic agent in charge of the district in which the theft occurs. Such reports are necessary for physicians in presenting a correct inventory of their narcotic supplies when called on to do so.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Annual Symposium on Heart Disease.—The tenth annual postgraduate symposium on heart disease, given by the heart committee of the San Francisco County Medical Society, will be held at the University of California Hospital, Stanford University Hospital and San Francisco Hospital, San Francisco, November 16-18. The course will include demonstration of patients, ward rounds and special instruction in roentgen examination and electrocardiography. At the dinner meeting the opening night Dr. William Dock, professor of pathology at Stanford, will speak on "The Treatment of Heart Disease Since Queen Bess."

Resolutions of an American Legion Post.—Service Clubs Post No. 546 of the American Legion of the Department of California, at Los Angeles, comprising mostly men of executive rank in their own organizations who are former officers in the military service, has unanimously adopted two resolutions. In the first resolution, the post stated that military mobilization would require thousands of doctors and, since only about 20 per cent of those applying for admission to medical schools at present are admitted, in selecting students for admission to medical schools adaptability for military service should be considered along with the other requirements; that R. O. T. C. graduates be given preference if otherwise equally qualified; also that the number of admissions to medical schools annually should be increased to provide enough doctors of medicine to serve the military forces in time of war and leave a surplus sufficient to serve the needs of the civilian population. The other resolution adopted by the post provided that further to improve the medical department of the U. S. Army and Navy a study be made to determine the feasibility of requiring all applicants for admission to the dental corps to be doctors of medicine specializing in dentistry. This resolution pointed out that at present in the medical department of the U. S. Army and Navy there are about 400 officers of the dental corps whose professional training is along the lines of medical officers but whose effectiveness is limited almost entirely to their technical ability.

COLORADO

Annual Session.—The Colorado State Medical Society will hold its annual session in Glenwood Springs Sept. 11-14, 1940, with headquarters at the Hotel Colorado.

Society News.—Dr. John Alexander, Ann Arbor, Mich., discussed "Surgery of Bronchiectasis and Abscess of the Lung" before the Medical Society of the City and County of Denver October 3. Dr. Elliott P. Joslin, Boston, addressed the society September 3 on "Treatment of Diabetes—1898-1939."——The Pueblo County Medical Society was addressed September 19 by Dr. Arthur J. Markley, Denver, on "Basic Factors of the Syphilis Control Program." Dr. Paul S. Wolfe addressed the society recently on craniocerebral injuries.

CONNECTICUT

Changes in Health Officers.—The *Connecticut Health Bulletin* announces the following changes in health officers: Dr. Homer C. Ashley, New Hartford, of Barkhamsted, filling the vacancy caused by the resignation of Marshall Case; Dr. Norman H. Gardner, East Hampton, succeeding Dr. John D. Milburn, resigned; Dr. Howard S. Allen of Woodbury, succeeding Dr. Frank Reichenbach, and Dr. William L. Higgins, South Coventry, of Columbia.——Dr. Daniel E. Shea, formerly director of the bureau of venereal diseases of the Hartford department of health on a part time basis, has been appointed full time director.

Society News.—The Yale Medical Society was addressed in New Haven October 11 by Walter R. Miles, Ph.D., on "The Polarity Potential of the Human Eye"; Dr. Robert M. Thomas and Frederick Dessau, "Experimental Tuberculosis in Mice"; Bert G. Anderson, D.D.S., "Developmental Enamel Defects; Clinical Descriptions and Classification," and Robert M. Lewis, "Use of a Synthetic Preparation Replacing Estrin."——Dr. Milton C. Winternitz, New Haven, addressed the Fairfield County Medical Association in Greenwich October 17 on "Infecting Agencies and Pathology."——At a joint meeting of the Hartford Medical Society and the Hartford County Medical Association October 16 Dr. Foster Kennedy, New York, discussed "Emotional Unrest in a Restless World."

ILLINOIS

New District Health Units.—The state department of health announces the establishment of four new district health units. There are now nineteen of these units offering full time service to ninety-six of the 102 counties in the state. The medical officers in charge of the new units are Drs. Abraham J. Levy, Gilman; Cecil A. Z. Sharp, Macomb; Clair L. Johns, Mount Sterling, and Jerome J. Sievers, Pana.

Symposium for Industrial Nurses.—The first annual symposium for industrial nurses will be presented by the state department of public health at the University of Illinois College of Medicine, Chicago, October 26-28. Collaborating organizations are Chicago Industrial Nurses Association, Greater Chicago Safety Council, Illinois Manufacturers Association, American Industrial Hygiene Association, American Medical Association and the University of Illinois College of Medicine.

Society News.—At a meeting of the Adams County Medical Society in Quincy September 11 Dr. Nathan S. Davis III, Chicago, spoke on "The Care of the Aged."——Dr. Carolyn N. MacDonald, Chicago, addressed a public meeting in Charleston September 28 on "The Importance of Prenatal Care"; the meeting was sponsored by the Coles-Cumberland County Medical Society and the Charleston Woman's Club.——At a meeting of the Rock Island County Medical Society in Rock Island September 26 Dr. Abraham F. Lash, Chicago, discussed "Prevention and Treatment of Abortion."——Dr. Archibald L. Hoyne, Chicago, discussed scarlet fever before the Kankakee County Medical Society at Kankakee September 14.——At a meeting of the Bureau County Medical Society September 12 in Princeton Dr. Roger T. Vaughan, Chicago, discussed "Differential Diagnosis and Treatment of Acute Abdominal Lesions."——Dr. William J. Morginson, Springfield, addressed the Christian County Medical Society, September 6, on "Diagnosis and Treatment of Some Common Skin Diseases."

Chicago

The Belfield Lecture.—Dr. Samuel R. Meaker, professor of gynecology, Boston University School of Medicine, will deliver the eleventh annual William T. Belfield Memorial Lecture of the Chicago Urological Society at the Palmer House October 26. His subject will be "Male Infertility from a Gynecologic Viewpoint."

Society News.—At a meeting of the Chicago Pathologic Society October 9 the speakers were, among others, Dr. Samuel A. Levinson, who delivered the presidential address on "History and Progress of the Scientific Work of the Cook County Coroner's Office" and Dr. Edith L. Potter, "Disseminated Ganglioneuroblastoma in a Stillborn Fetus."——Dr. Walter C. Alvarez, Rochester, Minn., addressed the Chicago Society of Allergy October 16 on "Gastrointestinal Allergy" and Dr. Charles K. Maytum, Rochester, Minn., spoke on "Oxygen Therapy and X-Ray Therapy in Asthma."——At a meeting of the Chicago Pediatric Society October 17 Drs. Arthur F. Abt and Heyworth N. Sanford spoke on "Hemolytic Disease in Infants" and "Nuclear Icterus" respectively.——The Chicago Gynecological Society was addressed October 20, among others, by Drs. Eustace L. Benjamin and William C. Danforth, Evanston, Ill., on "Bipartite Uterus" and Robert M. Grier and Herbert O. Lussky, Evanston, Ill., "Premature Infant Mortality."

INDIANA

Memorial to Physician.—A memorial to the late Dr. St. Clair Darden, South Bend, superintendent of Healthwin Hospital from 1920 to 1932, was unveiled recently. The monument is a large granite boulder, bearing a bronze plaque, given by persons who attended Camp Darden. Dr. Darden died Nov. 15, 1932.

Marihuana Eradication.—A program of eradication of marihuana and education of the public to the dangers of the weed has been launched in Indiana by Dr. Verne K. Harvey, secretary, state board of health, in compliance with a recent law. Gene Ryan, Indianapolis, formerly a state police detective, has been appointed state narcotic inspector in charge of marihuana eradication and enforcement.

MASSACHUSETTS

Society News.—Gregory Pincus, Sc.D., visiting professor of experimental zoology, Clark University, Worcester, discussed "Sex Hormones in Cancer" before the Worcester District Medical Society in Worcester September 13.——At a meeting of the Pentucket Association of Physicians September 14 in Haverhill, Dr. William Dameshek, Boston, spoke on "Lessons from the Blood Applicable to Problems of the General Practitioner."

The New England Postgraduate Assembly.—The New England Postgraduate Assembly, sponsored by the state medical societies of Massachusetts, New Hampshire, Rhode Island, Maine and Vermont, will be held at the Sanders Theater, Harvard University, Cambridge, October 31-November 1. Lecturers will include:

Dr. Jesse G. M. Bullowa, New York, Basis of Specific Therapy in the Management of the Pneumonias.
Dr. Roscoe R. Graham, Toronto, Ont., Canada, Chronic Cholecystitis.
Dr. Albert C. Furstenberg, Ann Arbor, Mich., Acute Suppurations of the Mouth and Pharynx.
Dr. James S. McLester, Birmingham, Ala., The Role of the Vitamins and Other Essential Substances in Human Nutrition.
Mr. H. H. Clegg, federal bureau of investigation, U. S. Department of Justice, Washington, D. C., The War on Crime.
Dr. Benjamin W. Carey, Detroit, Pyelitis in Children.
Dr. Eldridge L. Eliason, Philadelphia, Team Work in the Treatment of Gallbladder Disease.
Dr. Joseph E. Moore, Baltimore, Latent Syphilis.
Dr. Harvey B. Matthews, Brooklyn, Pelvic Infection: Diagnosis and Management.
Dr. Maurice C. Pincoffs, Baltimore, Clinical Varieties of Hypertension.
Dr. Charles C. Higgins, Cleveland, Prevention of Recurrent Renal Lithiasis.
Sir Thomas Lewis, Rickmansworth, England, Venous Congestion and Its Measurement.

MICHIGAN

State Medical Election.—Dr. Paul R. Urmston, Bay City, was chosen president-elect of the Michigan State Medical Society at its recent annual session and Dr. Burton R. Corbus, Grand Rapids, was installed as president.

Goiter Prevention.—A statewide educational program to promote the use of iodized salt as a preventive of simple goiter is being sponsored this month by the state department of health, the state medical society and the Salt Producers Association of Michigan. The work will be carried on principally through the schools. Physicians, health officers and nurses who wish copies of the folder "Michigan Children Need Iodized Salt" for distribution may obtain them from the state department of health, Lansing.

The Max Ballin Lectures.—The North End Clinic, Detroit, announces the Dr. Max Ballin Memorial Lectures to be given at the Detroit Institute of Art. The following speakers will discuss "Newer Applications of Practical Surgical Physiology" as applied to the listed topics:

Dr. Isidore S. Ravdin, Philadelphia, Gallbladder and Biliary Tract, November 1.
Dr. Charles F. Geschickter, Baltimore, The Breast, November 8.
Dr. Edward William Alton Ochsner, New Orleans, Preoperative and Postoperative Care, November 15.

New Virus Research Center.—The National Foundation for Infantile Paralysis has awarded an annual grant of $12,900 to the laboratories of the state department of health to establish in Lansing a virus research laboratory. A special grant of $5,000 has been given by the U. S. Public Health Service to aid in providing necessary laboratory facilities where this research work may be carried on. Dr. Sidney D. Kramer, formerly of Brooklyn, executive secretary, general advisory committee, National Foundation for Infantile Paralysis, has been appointed director of the state department's new division of virology, which will supervise the new laboratory. Dr. Henry E. Cope, Detroit, has been appointed to the staff of the bureau of laboratories to take charge of the division of clinical pathology. He will be associated with Dr. Kramer it is reported.

MISSOURI

Jackson County Health Forum.—Announcement is made of the 1939-1940 season of the Jackson County Health Forum, sponsored by the auxiliaries of the accredited hospitals of Jackson County. The preliminary notice lists the following speakers:

Dr. Louis J. Karnosh, Cleveland, September 20, Medicine and Crime.
Dr. Rock Sleyster, Wauwatosa, Wis., President of the American Medical Association, October 18, What Price Depression?
Dr. Philip Lewin, Chicago, November 15, Your Feet Deserve Good Care.
Dr. Thurman B. Rice, Indianapolis, December 20, Mental and Emotional Hygiene.
Franklin C. Bing, Ph.D., Secretary, Council on Foods, American Medical Association, January 17, Vitamin Follies.
Dr. Henry F. Helmholz, Rochester, Minn., February 21, How to Avoid and Care for the Diseases of Infancy and Childhood.
Dr. Elliott P. Joslin, Boston, March 20, Diabetes.
Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, April 17, Frontiers of Medicine.

NEBRASKA

Annual Clinical Assembly in Omaha.—The seventh annual assembly of the Omaha Mid-West Clinical Society will be held October 23-27 with headquarters at the Hotel Paxton. There will be general assemblies each morning; clinics will be held each afternoon and scientific sessions each evening. The guest speakers will be:

Dr. Clarence Rutherford O'Crowley, Newark, N. J., Anomalies of Kidney and Ureter; Polycystic Kidney Disease.
Dr. Charles Anderson Aldrich, Winnetka, Ill., Treatment of Nephritis in Childhood; Role of Gratification in Early Development.
Dr. Clifford J. Barborka, Chicago, Subclinical States of Nutritional Deficiency; Medical Management of Gallbladder Disease.
Dr. Walter Schiller, Chicago, Diagnosis of Malignancies of the Female Generative Tract; Sexual Abnormalities in Females.
Dr. William Wayne Babcock, Philadelphia, Intestinal Malignancy: Clinical Methods as a Guide to the Diagnosis and Treatment of Various Surgical Affections.
Dr. Frank E. Burch, St. Paul, Ocular Evidences of Intracranial Disease; Recent Advances in Ophthalmic Therapeutics.
Dr. Louis J. Karnosh, Cleveland, Diagnosis and Treatment of Polyneuritis; Recognition and Management of Early Psychiatric Problems in General Practice.
Dr. Grandison D. Royston, St. Louis, Recognition and Treatment of Pelvic Malignancy; Indications and Contraindications for Operative Delivery.
Dr. James S. Speed, Memphis, Tenn., Rational Treatment of Acute and Chronic Osteomyelitis; Open Reduction and Internal Fixation of Selected Fracture Cases.
Dr. William L. Estes Jr., Bethlehem, Pa., Acute Nonpenetrating Trauma of the Abdomen.
Dr. Elliott C. Cutler, Boston, Incomplete Intestinal Obstruction; Acute Appendicitis.
Dr. Samuel A. Levine, Boston, Rheumatic Heart Disease; Bedside Diagnosis of Cardiac Arrhythmias.
Dr. William R. Houston, Austin, Texas, Learned Reactions.

Friday morning October 27 there will be a symposium on preoperative and postoperative treatment presented by Drs. Ralph H. Major, Kansas City, Mo.; John S. Lundy and Lloyd H. Mousel, Rochester, Minn.; Walter G. Maddock, Ann Arbor, Mich.; John R. Paine, Minneapolis, and Dr. Estes.

NEW JERSEY

Society News.—Dr. Emil Novak, Baltimore, addressed the Hudson County Medical Society, Jersey City, October 3, on "Endocrine Aspects of Gynecology."——A symposium on "Newer Aspects of Preoperative and Postoperative Care" was presented before the Bergen County Medical Society, Hackensack, October 10, by Drs. Harry A. D. O'Connor, who discussed thyroid cases; John A. Lawler, abdominal cases; John H. Mulholland, intestinal obstruction, and Samuel Standard, fluid balance. All are members of the faculty of New York University College of Medicine.——Dr. Jesse Lynn Mahaffey, state health officer, Trenton, addressed the Atlantic County Medical Society October 13 in Atlantic City on diagnosis and treatment of syphilis.

NEW YORK

New Division of Cancer Control.—A new division of cancer control has been created in the state department of health with Dr. Louis C. Kress, Buffalo, as director. Organization of a statewide program of cancer control, authorized by legislation this year, will begin immediately under the direction of Dr. Kress. The law creating the new division includes an appropriation of $35,000 for the conduct of three major activities: statistical, clinical and educational. The headquarters of the division are to be in Albany in the New York State Teachers' Association building. The law makes cancer a reportable disease upstate and provides for study of cancer distribution and study of the disease according to age, type and other characteristics. Tumor clinics are to be established in recognized general hospitals and consultants will be provided to aid in the establishment of clinics and their proper functioning. In addition a special effort will be made to study all possible relations between occupations and cancer. Dr. Kress since 1932 has been assistant director of the old division of cancer control in the state department.

District Meetings.—The Seventh District Branch of the Medical Society of the State of New York held its annual meeting at Canandaigua September 28. Four sound motion pictures portraying the work of Dr. Ephraim MacDowell, the story of Jenner and vaccination, discovery of insulin by Banting and Best, and the work of Semmelweiss on sanitation in childbirth were shown. Addresses were made by Drs. Nathan B. Van Etten, New York, President-Elect of the American Medical Association, on "The Quality of Medicine"; Edward S. Godfrey Jr., state health commissioner, Albany, "Our Health," and Terry M. Townsend, New York, president of the state society, "Political Medicine." Demonstrations were presented as follows: surgical emergencies, Dr. John J. Moorhead, New York; care of premature infants, Dr. Burtis B. Breese Jr., Rochester; peripheral vascular diseases, Dr. Herman E. Pearse Jr., Rochester; physical therapy, Dr. Louis V. J. Lopez, Canandaigua, and occupational therapy, Dr. Raymond F. Wafer, Canandaigua.——The annual meeting of the Eighth District Branch of the Medical Society of the State of New York was held in Batavia October 5. Speakers on the program were:

Dr. Grover C. Penberthy, Detroit, Trauma and Low Back Pain.
Dr. George F. Cahill New York, Hematuria: Its Clinical Significance.
Dr. Albert D. Kaiser, Rochester, The Problem of Rheumatic Infection in Childhood.
Dr. Merrill C. Sosman, Boston, Roentgenology as an Aid in the Diagnosis of Heart Disease.

There was a discussion on "The Diagnosis and Therapy of the Frequent Gastro-Intestinal Lesions Met With in General Practice," with Dr. Abraham H. Aaron, Buffalo, as chairman. A discussion of the Western New York Indemnity Plan was opened by Dr. George R. Critchlow, Buffalo.

New York City

William H. Welch Lectures.—Dr. Herbert M. Evans, of the Institute of Experimental Biology, University of California, Berkeley, will deliver the second of the William H. Welch Lectures at the Mount Sinai Hospital October 24 on "Unsolved Problems in Anterior Pituitary Physiology." The first of this group was given October 20 on "New Light on the Biological Role of the Antisterility Vitamin E."

Personal.—Dr. Oswald S. Lowsley was made an Officier de l'Ordre National de Honneur et Merite by the president of Haiti September 12 in recognition of his services in instructing the Haitian medical profession in urologic surgery. He was also made an honorary professor in the medical school.——It is reported that the "Manual of Diseases of the Eye" by Dr. Charles H. May is being translated into Urdu by the Osmania University, Hyderabad, India, the tenth translation of the book into a foreign language. The sixteenth American edition has just been published.

Conference on Convalescent Care.—The committee on public health relations of the New York Academy of Medicine in cooperation with the Josiah Macy Jr. Foundation will hold a two day conference on convalescent care at the Academy November 9-10. The purpose of the conference is "to redefine the problem of convalescence in the light of recent progress in medical science and to explore the need for further research into the socio-economic and medical aspects of convalescent care." Admission to the conference sessions will be by invitation. A meeting will be held Friday evening November 10, at which the discussions will be summarized. Persons interested are invited to the evening meeting.

Regional Meeting of Railway Surgeons.—The New York and New England Association of Railway Surgeons will hold its forty-ninth annual meeting November 2-3 at the Hotel Commodore. The first day will be given over to clinics at the New York Post-Graduate Hospital under the direction of Dr. Thomas H. Russell. Speakers for the second day include:

Dr. Thomas Parran, surgeon general, U. S. Public Health Service, Washington, D. C., Railway Surgeons and the Public Health.
Dr. Fred W. Geib, Rochester, N. Y., Acute Craniocerebral Trauma.
Dr. William E. Mishler, Cleveland, Trauma in Transportation.
Dr. Tom Outland, Sayre, Pa., Treatment of Fractures of the Spine.
Dr. Albert B. Ferguson, New York, X-Ray Differentiation of Traumatic and Nontraumatic Lesions.

OKLAHOMA

New Health Officers.—Dr. John A. Morrow, Sallisaw, has been appointed deputy health commissioner of the Oklahoma State Health Department.——Dr. Joe Dorrough, Haileyville, has been appointed health superintendent of Pittsburg County and Dr. Weldon K. Haynie, Durant, of Bryan County.

Annual Clinical Conference.—The Oklahoma City Clinical Society will present its ninth annual fall clinical conference October 30 to November 2. The lecturers will be:

Dr. Albert H. Aldridge, New York, obstetrics.
Dr. Edgar G. Ballenger, Atlanta, urology.
Dr. Lewellys F. Barker, Baltimore, internal medicine.
Dr. Lowell S. Goin, Los Angeles, roentgenology.
Dr. Harry S. Gradle, Chicago, ophthalmology.
Dr. John A. Kolmer, Philadelphia, pathology.
Dr. Frank H. Lahey, Boston, surgery.
Dr. Joe V. Meigs, Boston, gynecology.
Dr. Albert Graeme Mitchell, Cincinnati, pediatrics.
Dr. Emil Novak, Baltimore, endocrinology-gynecology.
Dr. Hobart A. Reimann, Philadelphia, internal medicine.
Dr. Erwin R. Schmidt, Madison, Wis., surgery.
Dr. Herman C. Schumm, Milwaukee, orthopedic surgery.
Dr. Rock Sleyster, Wauwatosa, Wis., President, American Medical Association, psychiatry.
Dr. Marion B. Sulzberger, New York, dermatology.
Dr. William A. Wagner, New Orleans, otolaryngology.

PENNSYLVANIA

New Medical Directors.—Dr. Harry L. Baker, Catasauqua, has been appointed medical director for Lehigh County, succeeding Dr. Eugene H. Dickenshied, Allentown.——Dr. Alfred L. Hoffmaster, New Castle, has succeeded Dr. Paris A. Shoaff, New Castle, as medical director of Lawrence County.——Dr. James B. Heller, Pottsville, has been appointed medical director of Schuylkill County.

Psychiatry Society Organized.—The Pennsylvania Psychiatric Society was organized at a meeting in Pittsburgh October 5. Dr. William C. Sandy, director of the state bureau of mental health, Harrisburg, was elected president and Dr. Henry I. Klopp, Allentown, president-elect. Dr. Leroy M. A. Maeder, Chancellor Hall, 206 South Thirteenth Street, Philadelphia, is secretary. In a statement at the organization meeting Dr. Sandy observed that the new society should exercise a statewide general leadership in psychiatry, being a coordinating body to which controversial and other questions of psychiatric interest may be referred for an authoritative opinion, should encourage general medical interest by participation in society meetings and should assist in developing and supporting proper psychiatric standards.

Philadelphia

Surgical Positions Filled at Jefferson.—Dr. Thomas A. Shallow, professor of surgery at Jefferson Medical College, has been appointed to the Samuel D. Gross chair of surgery at Jefferson, a position vacant since the death in 1933 of Dr. John Chalmers DaCosta. Newspapers also announce the appointment of Dr. George P. Müller, also professor of surgery, to the Grace Revere Osler chair of surgery. The Gross professorship was established in 1910 by Mrs. Maria Gross Horwitz, Baltimore, in honor of her father, professor of sur-

gery at Jefferson from 1856 to 1882. Dr. DaCosta held the chair from 1910 to his death in 1933. Dr. Shallow graduated at Jefferson in 1911 and Dr. Müller at the University of Pennsylvania School of Medicine in 1899.

Society News.—Dr. Alfred Blalock, Nashville, Tenn., gave the forty-fifth Mary Scott Newbold lecture of the College of Physicians of Philadelphia October 4 on "Shock." —— Drs. Albert E. Bothe and Benjamin Lipshutz addressed the Philadelphia Academy of Surgery October 9 on "Renal Hypertension" and "Regional Enteritis" respectively.——Drs. Albert B. Ferguson, New York, and George E. Pfahler addressed the Philadelphia Roentgen Ray Society October 5 on "Characteristics of Bone Tumors" and "Treatment of Bone Tumors" respectively. —— Speakers before the Obstetrical Society of Philadelphia October 5 were Drs. Walter Meredith Heyl on "Experiences with the Placental Blood Bank" and Edward F. McLaughlin, "Intermenstrual Bleeding, A Surgical Condition."

Pittsburgh

Hospital News. — Mercy Hospital celebrated its annual "Mercy Day" September 28. Dr. John H. Musser, New Orleans, spoke on coronary occlusion.

Society News.—The Pittsburgh Otological Society held a joint meeting with the Cleveland Otolaryngological Club September 27, with Dr. Charles T. Porter, Boston, as the guest speaker on "Orbital Cellulitis."

UTAH

Special Assessment for Insurance Unit.—At a meeting of the house of delegates of the Utah State Medical Association September 4 the articles of incorporation of the Utah Physicians Service Company were approved and an assessment of $15 was levied on each member of the society to provide for preliminary expenses. The work was carried out by the Medical Service Bureau and the medical economics committee of the society under authority given by the house of delegates at a special session Dec. 10, 1938. According to the *Rocky Mountain Medical Journal,* the action was taken to enable the profession to meet the demands for hospitalization on a prepaid basis and if possible at least partial medical reimbursement.

WISCONSIN

State Medical Election. — Dr. Ralph P. Sproule, Milwaukee, was chosen president-elect of the State Medical Society of Wisconsin at the annual meeting in Milwaukee September 13-15 and Dr. Ray G. Arveson, Frederic, was installed as president. The next annual meeting will be held in Milwaukee September 18-19, 1940.

GENERAL

White House Conference on Child Health.—A recommendation that President Roosevelt be asked to call the White House Conference on Children into session January 18-20 was adopted at a special meeting of the planning committee of the conference in Washington October 6. The final session was originally scheduled for next spring.

Examination in Surgery.—The American Board of Surgery will hold an examination in Part II November 15 in Atlanta, Ga. The candidates will include only those living in the South. Additional information may be obtained from Dr. John Stewart Rodman, 225 South Fifteenth Street, Philadelphia.

Session on Medical Hydrology Postponed.—On account of the war in Europe the International Society of Medical Hydrology has postponed indefinitely its annual meeting which was scheduled to be held in Italy during October. Since the membership of the society is distributed largely through the countries now at war, it has been necessary to reduce the activities of the International Society of Medical Hydrology to the minimum. In keeping with this policy, the *Archives of Medical Hydrology* for October will not be issued at present. Correspondence addressed to the society at its regular address will receive attention, 22 Bedford, London, W.C.1.

Positions for Graduate Training in Obstetrics and Gynecology.—The American Board of Obstetrics and Gynecology receives from time to time information regarding available internships and assistant residencies. A number of such positions are available each year to men who wish to place their names on file with the board. In all instances a preliminary internship, preferably of the general, rotating type is necessary, and special internships or assistant residencies should be sought at least one year in advance. It is suggested that hospitals having positions open and men seeking such positions for training communicate with the secretary. Applicants should submit names, addresses and brief biographic data. Address the American Board of Obstetrics and Gynecology, 1015 Highland Building, Pittsburgh (6).

Warnings Against Swindlers.—Harvard Medical School, Boston, has received reports that a magazine salesman has been soliciting subscriptions alleging that he is a student at Harvard and is attempting to earn money for further medical study. The medical school reports that this man, who calls himself Chester Wainwright, is not known and has never been a student there.——Reports have recently come from Missouri of a man who has swindled ophthalmologists in various towns by ordering glasses and making a check for a larger amount than the price. The physician makes change and the man never returns. The swindler has used the name W. C. Curran and appears to be a farmer. The check is usually for $30. The man is about 5 feet 10 inches tall, weighs about 155 pounds, has light sandy hair and blue eyes and is smooth shaven with a ruddy complexion.

Meeting of Association of Medical Colleges. — The fiftieth annual meeting of the Association of American Medical Colleges will be held at the Netherland Plaza Hotel, Cincinnati, October 23-25, under the presidency of Dr. Willard C. Rappleye, New York. The speakers will include:

Dr. Walter Bauer, Boston, The Tutorial System in the Harvard Medical School.
William H. Welker, Ph.D., Chicago, Graduate Medical Education.
Dr. Marion A. Blankenhorn, Cincinnati, Graduate Training in Internal Medicine in a Municipal Hospital.
Dr. Albert Graeme Mitchell, Cincinnati, Graduate Training in Pediatrics at the University of Cincinnati.
Dr. Mont R. Reid, Cincinnati, Training of Surgeons: Method in Use at the Cincinnati General Hospital.
Orren W. Hyman, Ph.D., Memphis, Tenn., Further Attempts to Refine the Methods of Selecting Medical Students.
Dr. Robin C. Buerki, Chicago, Internships and Residencies.

A symposium on student health service will be presented by Drs. John Sundwall, Ann Arbor, Mich., Nathan T. Milliken, Hanover, N. H., Edward S. Ryerson, Toronto, and Harold S. Diehl, Minneapolis.

Fund to Aid Infantile Paralysis Victims.—A gift of $50,000 to aid handicapped children who are sufferers from infantile paralysis in twenty-five cities of the country has been announced by the Will Rogers Memorial Commission, according to the New York *Times* October 6. The funds were collected last spring from theater-goers in an appeal made in the principal theaters of the country. The gift is being made available through the local chapters of the National Foundation for Infantile Paralysis for emergency needs and for recovery treatment for handicapped children in the chapter areas. Of the shares distributed October 6 New York received the largest, amounting to $14,595. Other cities in which disbursement took place are Los Angeles, San Francisco, Hartford, Springfield, Boston, Kansas City, Hoboken, Cleveland, Oklahoma City, Tulsa, Houston, Dallas, Milwaukee and Portland. Cities to receive their allotments later are Chicago, Newark, New Orleans, St. Louis, Cincinnati, Detroit, Philadelphia, Pittsburgh, Seattle and Washington. The commission also supports the Will Rogers Memorial Hospital, Saranac Lake, N. Y., and an emergency ward in the French Hospital, New York, for the use of theatrical people.

Society for Prevention of Blindness. — The National Society for the Prevention of Blindness will hold its annual meeting at the Hotel Astor, New York, October 26-28, under the presidency of William Fellowes Morgan. Among the speakers will be:

Dr. Joseph Minton, London, England, What Treatment of 7,000 Industrial Eye Injuries Has Taught Us.
Verne A. Zimmer, U. S. Department of Labor, Washington, D. C., The Interest of the Federal Government in Conserving the Sight of Industrial Workers.
Dr. Leonard Greenburg, New York, Poisonous Substances Affecting the Eyesight of Industrial Workers and How to Guard Against This Growing Hazard.
Dr. Willis S. Knighton, New York, Development of the Eye.
Dr. Otis J. Douphinett, Portland, Me., Early Supervision of Eye Muscle Control.
Dr. Philip M. Stimson, New York, What the Pediatrician Does to Save Sight.
Dr. James V. Cassady, South Bend, Ind., Prevention of Blindness Programs Developed by State Medical Societies.
Dr. Vonnie M. Hicks, Raleigh, N. C., What State Supervising Ophthalmologists Are Doing in the Prevention of Blindness.
Dr. Carl E. Rice, Washington, D. C., Possibility for Prevention of Blindness.
Dr. Harry S. Gradle, Chicago, Incidence and Distribution of Trachoma in the United States.
Dr. James G. Townsend, Washington, D. C., Treatment of Trachoma.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 27, 1939.

Medical Arrangements in Time of War

In a letter to the *Times,* Lord Dawson, late president of the Royal College of Physicians, discusses the problem of making the best use of the medical profession during a war which presents novel features. The task of registering physicians for varied duties has been performed by the British Medical Association during the past twelve months with conspicuous success. The Ministry of Health took the hospitals under its direction and mobilized physicians to staff them. It had the difficult task of urgent preparation for massed air attacks, involving rapid evacuation of casualties from the center to the periphery, side by side with care for the hospital needs of the civil population. For a time the latter faded and the big voluntary hospitals were denuded. But now organization is taking the place of improvisation. The Ministry of Health has taken steps to enable consulting physicians and surgeons to transfer from whole time to part time services in order that hospital and private patients may be served. It has to be remembered that, after the children, with those in charge of them, and the aged and infirm had been evacuated, the great majority of the citizens had to live and work and therefore required their hospitals. Services have been resumed with a proportion of the staffs.

Lord Dawson suggests the following modifications: 1. A portion of each hospital must always be available as a casualty clearing station. 2. The average stay in the hospital should be shorter. 3. Serious cases should also be provided for in the proximal outside hospital of the sector. (The dividing of London into sectors with the great hospitals at the center and affiliated hospitals in the country, into which the patients were evacuated for safety from air raids, has been described in a previous letter.) On the other hand, patients requiring special treatment, such as highvoltage roentgen therapy, must be gathered wherever such treatment is located. It has been agreed in principle that there is to be a united hospital service for the whole country. The army will provide directly for its sick and wounded in the theater of war, but in England they could be treated in the same hospitals as civilians, except slight and convalescent cases, which can be aggregated in convalescent hospitals subject to military discipline. This system would result in better service and save cost.

The supply of physicians is limited and has called for careful allotment. In particular the skill of specialists should not be wasted by needless duplication. Head and chest injuries are examples. Centers for both are being organized where not only they can be treated to the best advantage but where men of selected ability are being constantly trained to fill posts at home or over sea. If arrangements are left to military or civilian authorities, confusion will result, especially if a key man is put to wrong use. A small "intelligençe" committee consisting of representatives of the army and its civilian medical services could act as a clearing house. Success in war depends more and more on knowledge and its application not only to medicine but to every other aspect of the struggle.

The Fate of Swallowed Foreign Bodies

Although many cases of swallowed foreign bodies have been reported, little has been written on the question whether they should be removed. At the Section of Surgery of the Royal Society of Medicine Mr. A. M. H. Siddons endeavored to answer this question by means of the records of three London hospitals—St. George's, the Royal Waterloo and the Belgrave, which have a high proportion of children's beds. It is children and the insane who most frequently swallow foreign bodies. He collected records of 126 patients admitted to these hospitals. It should be borne in mind that these patients were selected by surgeons as sufficiently dangerous to require treatment as inpatients. It is not possible, therefore, to draw conclusions from them as to the percentage of all swallowed foreign bodies which require removal. Indeed, this cannot be ascertained, as many cases never reach the physician. In 107 of the 126 cases (85 per cent) the foreign bodies were passed naturally, and in only four did perforation or obstruction occur. The remaining thirteen foreign bodies were removed, as the surgeon considered it dangerous to leave them or because it did not appear to him that they would be passed naturally. These figures may be compared with American ones reported by Henderson and Gaston in the *Archives of Surgery* in January 1938. They found nine instances of perforation in about 800 cases, most of which were not admitted to the hospital. They emphasize that many of the patients never seek medical aid and that therefore this figure of about 1 per cent for perforation is too high.

Siddons divided his cases into three groups: blunt objects (sixty), long objects (eighteen), sharp objects excluding open safety pins (forty) and open safety pins (eight). It is interesting how long blunt objects stop in one place in the alimentary canal, only to progress again for no apparent reason. It might be expected that objects which failed to pass the pylorus for a whole day would never do so, but in some cases they were watched in the stomach for weeks and then went on their way. The average time for the object to pass in the entire series was six days and in each group about the same. What is more important, they did not seem to do any harm while stationary. There are many records of insane persons and professional swallowers who have retained objects in their stomachs for long periods without ill effects. In only one case of the series was a body arrested at the ileocecal region, causing intestinal obstruction. In the sixty cases of blunt objects there were eight operations for removal. Excepting the case mentioned there were no symptoms of harm. The operations were performed because the surgeons thought that the object would not pass, and had they been left probably most of them would have been passed naturally. Siddons thinks that there are very few objects able to pass down the esophagus which will not pass through, provided they are not sharp or unduly long. After the pylorus, the ileocecal region seems to be the only other likely site of arrest.

Long blunt objects include screws, nails and Kirby grips. They usually pass the pylorus but find the curves of the duodenum difficult. After this they usually find no obstruction. In the eighteen cases only one operation was performed: removal of a nail from the cecum on the second day. Siddons believes that it would have been passed naturally if it had been left. All the other objects were passed.

Sharp foreign bodies include needles, pins and open safety pins. Excluding the last there were forty cases, of which the object was passed naturally in thirty-seven. Not one perforated. In three cases the object was removed from the stomach because the surgeon did not think it safe to leave. The open safety pin presents a special problem. In four of the eight cases it was removed by operation, with one death. Of the other four, one perforated the stomach and was removed safely; the other three were passed naturally. Eight cases are not enough to form a basis for evaluating the risks, but there is no doubt that they are greater than with any other object. Siddons thinks, however, that they should be given a chance to pass, like other objects. Nearly all blunt objects pass naturally and should be given from four to six weeks. He does not agree with the recommendation to give bulky foods, as they may hasten obstruction and even in the case of sharp objects do not serve any useful purpose. He advises an ordinary diet and no purgatives.

Alterations in Medical Journals

As in the case of the lay press, medical journals have been obliged by the war to reduce the number of pages. The *British Medical Journal* has ceased to print its Key to Medical Literature. To economize, the Supplement will no longer appear as a separate inset. In it will be published information from the Central Emergency Committee of the British Medical Association, which was created to supply the medical needs of the fighting forces and civilians injured in air raids. It is probable that increasing economy of space will be necessary, so contributors are asked to be sparing of their words.

PARIS

(From Our Regular Correspondent)

Sept. 13, 1939.

French Medical Mobilization

Long before the war, France had prepared its medical mobilization. Without describing the medical organization in the army, I should like to show how the major health problems have been attacked and what has become, in the present war, of medicine and the medical profession.

A large number of France's 28,000 physicians have been drafted for the army. In fact, a law passed last year permits the government to commandeer the services of every Frenchman 18 years and over, including female physicians. The character of modern warfare is different from that of previous centuries. Until the French Revolution, war was a vocation and mercenary soldiers fought on limited territories. Their wounds were treated by "surgeons," one of whom was Ambroise Paré, the father of French surgery. Many others have left their mark in the history of medicine. Today the entire nation, except women and children, is engaged in war.

Few physicians have been exempt from military duty: 72 per cent serve in the national defense; 67 per cent of these wear uniforms; 5 per cent are civilians who function partly under army orders or those of the civil government. Accordingly, there remain about 6,000, many of whom are elderly or infirm. In consequence, many small towns and country regions have no medical service. Formerly, armies carried with them not only their "surgeons" but also their ambulances and to a certain degree their hospitals. Nowadays, except for establishments at the front which are, above all, centers of first aid and subject to quick changes, military health service coincides with civil health service. It includes large medical centers the equipment of which has been planned in times of peace and which utilize the hospital resources of peace times. Besides the wounded, the sick such as tuberculous persons have to be taken care of. From the medical point of view, both the tuberculous soldier and the tuberculous civilian are the same. Shifts of specialists have therefore been provided who look after civilian and military tuberculous patients in the existing sanatoriums, look after their recovery and follow them up after they leave the army.

What becomes, under these circumstances, of medical instruction? Students continue to enroll to the extent to which mobilization permits young men to undertake university studies, but the means of instruction have been greatly reduced. In large cities hospital training has reached a stage of anemia, partly because of the reduced population evacuated in large numbers and because of the abandonment of many class rooms as too exposed to the dangers of bombardment. The Faculty of Medicine of Paris had to move to Nantes to remain until further orders. Fifty-two per cent of its professional staff, 75 per cent of the agrégés, or assistants, and 90 per cent of the heads of laboratories or prosectors have enlisted. The students called to the colors there receive credits corresponding to their medical standing. Not only are arrangements made for examinations and thesis preparation but, in certain towns farther back from the front, courses of study lasting several weeks are organized which permit the students to get ready for examinations before examiners who, likely enough, will consider emergency conditions. Precautions have been taken for laboratories. Fragile instruments, museum collections, ornamental objects and rare books have been stored in protected cellars. The Faculty of Medicine of Paris continues, but its activities have been largely curtailed. War destroys not solely human lives and human works. It undoes spiritual and moral values often more difficult of replacement than a railroad bridge or a model factory.

Defensive Measures Against Air Bombardments

In spite of all the measures provided to prevent hostile aircraft from releasing bombs over civil populations, some, estimated at 30 per cent, may reach their mark. Many, but not all, of these bombs will fall outside houses. A committee of passive defense, therefore, has been set up by law presided over by Marshal Pétain. Professor Tanon, of the department of health of the Faculty of Medicine, has been placed in charge in Paris, where every one has been removed from the city whose presence can be dispensed with, reducing the population from three million to somewhat more than one million. These will be protected, in case of bombardment, in subterranean shelters capable of supporting the shock at least of a bomb of 50 Kg. or a crumbling of 2,000 Kg. per square meter of surface. Against gas, masks have been distributed sufficient to protect against all known gases but offering no aid against carbon monoxide or hydrocyanic acid and perhaps equally insufficient against new gases which modern war chemistry may evolve. Most of the shelters are gas tight. However, medical aid stations have been prepared against possible gas infiltrations, "cave ins" and resulting panics. These medical aid stations cover extensive subterranean spaces, generally storerooms or former quarries specially made over for their new use. They are supplied with small outside stations designed for those who have been infected with caustic gas. Aid stations are gas tight. Since gas might penetrate during the reception of patients, ventilation has been provided for from the outside air taken at a great altitude and above the gas level. This ventilation causes a higher pressure that protects the station against vitiated air. The output of the apparatus, each of which furnishes 600 cubic meters of air per hour, is calculated to carry 2 cubic meters of air hourly per cubic meter of the volume of space. The higher pressure, under these conditions, reaches between 2 and 6 mm. of mercury. The ventilators are set in motion by electricity, but, in case of a break in the current, apparatus with pedals resembling those of bicycles can assure functioning of the pumps. The air taken from the outside is analyzed every quarter of the hour by means of simple and rapidly functioning apparatus. If it is found vitiated—a thing of scant probability because of the height at which the air is taken—every one puts on his mask.

The patients, brought in by special outside crews, are assigned to one of three fundamental divisions: the wounded, the asphyxiated and the gassed. The wounded receive the necessary surgical attention in a simple operating room. Those asphyxiated are treated by the classic methods, inhalation of oxygen or carboxyl, camphorated oil or artificial respiration. Those overcome by mustard gas are copiously bathed and washed with chlorinated lime (10 per cent), undressed and douched with soap. The aids who have charge of them wear garments that protect them completely against yperite. After receiving first aid, the patients are assigned to special wards in Paris hospitals. Several kilometers from Paris a hospital with 5,000 beds receives the gassed whose treatment is likely to be prolonged. It is a model hospital from the point of view of perfect equipment for these treatments. Medical services thus organized are repeated on a smaller scale in all French cities. They seem to be adapted to all emergencies.

Primal Sutures of Wounds

Vassitch of Belgrade presented before the Academy of Surgeons an analysis of more than 19,000 traumas observed during 1929-1935, of which about 20 per cent were treated by primal suture. This operation does not entail grave accidents; however, it is necessary to take account of the object that caused the wound and whether the wound is clean or not. Vassitch adopts the classification proposed by Braine for flesh wounds. In wounds associated with fractures or complicated by osseous, articular or vascular lesions, bacterial virulence must be reckoned with. The essential prerequisite of the treatment of the wound is always its cleansing and the excision of contused tissue.

BERLIN

(From Our Regular Correspondent)

Aug. 30, 1939.

Congress of Surgeons

The opening address of this year's meeting of the Deutsche Gesellschaft für Chirurgie was by the chairman, Professor Nordmann, who is director of a hospital in Berlin. He cautioned against the exaggerated tendency toward new divisions of medicine. The efforts of neurologic surgeons to organize a distinct group was thwarted only by ministerial interference and by uniting them into a subdivision of the society.

The first paper was read by K. H. Bauer, of Breslau, on fractures of the base of the skull. Animals scarcely ever are subject to them and almost never through a fall. Such fractures are a "tribute to the progress of mechanics and traffic." Of those injured, 59 per cent were hurt in traffic accidents; 31 per cent of these died before medical attention could be given them; 66⅔ per cent of all skull fractures affect the base. The mortality in 4,200 observed cases was 39.2 per cent. The important diagnostic factor was the evidence of fracture revealed by the x-rays, and this was not so simple a matter. Three roentgenograms are required, especially the axial photograph with drooping head. Pressure on the brain can be relieved by intravenous injection of hypertonic salt and sugar solutions. Lumbar punctures in nearly all cases afford subjective and objective relief. Dandy and others, however, reject lumbar puncture in fractures of the base, on the ground that the brain may suffer further injury through change of position and because of the danger of secondary hemorrhages. As a last recourse trepanation is employed. Cushing ascribes to its early use the reduction of from 50 to 15.5 per cent in the mortality rate of fractures of the base of the skull. In about 10 per cent of the cases trepanation is indicated; extradural bleeding is a strong indication. In cases of subdural hematoma the mortality in surgical intervention is considerably higher. Of 512 subdural hematomas, fifty-two could not be diagnosed. According to recent statistics (2.5 per cent in 430 cases) danger of meningitis is low. Prognosis of employability after fractures of the base of the skull is discouraging. Frequently, according to the speaker, paralyses of the nerves and injuries of the organs of sense can be proved; psychic disturbances are rare. Scar tissue formations of the brain may appear as a retarded injury and may induce epileptic hemiplegias. In the discussion of the paper Tönnis, a Berlin surgical neurologist, pointed out the results achieved in treating late epilepsy due to accidents. Success depends on selecting cases suitable for surgery. Only such epileptic patients should be operated on who have a dural bone callus; eleven of the twelve patients operated on did not suffer subsequent attacks. Of thirteen patients with skull fracture, eleven were permanently cured of attacks by surgery. In his paper on osteomyelitis Laewen, of Königsberg, pointed out that of late there has been a marked tendency to conservative therapy. Blood transfusion, suitable nutrition and rest are the most important conservative curative measures. Maggot therapy is also used.

Wilbolz, of Berne, read a paper on urogenital tuberculosis. He called attention to the fact that this was an open tuberculosis and dangerous for those in attendance on the patient. Hematogenic infection was here as significant as canalicular. Tubercle bacilli confined to the urogenital tract always seek to return. The seat of urogenital tuberculosis must be sought in the kidneys. The speaker favored early recourse to nephrectomy, which yielded permanent recovery in 80 per cent of the cases. Delayed surgery reduced this favorable proportion to 50 per cent. Consequently, early diagnosis of urogenital tuberculosis was of the greatest importance. Examination of the urine for tubercle bacilli often furnishes the answer, for tubercle bacilli are never excreted from a nontuberculous kidney. Tuberculous bacilluria is always the forerunner of tuberculosis of the kidney that is characterized by caseous cavities. If pyuria appears, nephrectomy must be performed. In benign cases tuberculosis will assume the "fibrous form," that is, contraction without caseation localized under the renal cortex; fibrous cortices without pyuria may cicatrize. Delay under medical observation was therefore advisable. If pyuria and slight functional disturbances accompany bacilluria, the caseous form of tuberculosis of the kidney is to be assumed and nephrectomy is in order. Bacilluria is almost always unilateral. This justifies the assumption that tuberculosis of the kidney is almost always unilateral.

Fromme, of Dresden, gave an exhaustive account of gastric ulcers, which have become more numerous and their seat nowadays is in the duodenum rather than in the stomach. Resection of ulcers of this type ought not to be insisted on as imperative, because of the danger of severing the choledochus. In 5 per cent of the cases, duodenal fistulas set in with a mortality of 50 per cent. The roentgenogram does not always clearly indicate whether an ulcer is operable. In nonoperable ulcers, resection for the purposes of elimination (according to Finsterer), also gastro-enterostomy, could be recommended. The disadvantages of this operation were that the ulcer remained, inviting the danger of hemorrhages and perforation. Likewise malignant degeneration constituted a possibility, though not a grave one. In the discussion that followed this paper, the greatest emphasis was put as usual on the results achieved by the different methods, but without agreement. Haberer, of Cologne, gave a report of his 3,373 resections of the stomach, of which 435 constituted corrective surgery. In 16 per cent of the cases, 211 extirpations of peptic ulcers of the jejunum resulted fatally. Peptic ulcers of the jejunum cannot be avoided in cases of gastro-enterostomy. He achieved the best results with the second procedure of Billroth, with anastomosis according to Roux.

Professor Lehmann, of Rostock, treated the problem of the relations of surgical clinics and x-ray institutes. Roentgenology is not a separate specialty but a medical ally. The type of men who are merely roentgenologists will disappear. X-ray institutes conducted independently easily lose contact with the clinics and yet the work done in the x-ray laboratory is part and parcel of the work done in the clinics. The directors of x-ray divisions should be members of the clinical staffs. He admitted the great difficulties of an organizational nature. For special examinations such as those of pyelography, ventriculography and myelography, the ward system of hospitals with central x-ray institutes was not practical. Roentgenologists should not by themselves determine indications. Lehmann thinks that the x-ray department of a hospital should be in charge of a roentgenologist who is subject to the director of the surgical division. This position was challenged by the chairman of the society of German roentgenologists, who stated that the greatest importance was attached to close cooperation but that the problems discussed by Lehmann were still too unclarified to permit the roentgenologists to make a final decision. The comments of Professor Götze, surgeon in Erlangen,

on the degree to which specialization was being carried on deserve mention. In a general hospital, young physicians no longer had an opportunity to become acquainted with a large number of diseases requiring surgery, because these were taken care of by specialists. However, he continued to say, it was necessary that general surgery and the special fields of medicine supplement one another. Surgical clinics of universities should control all special fields of medical surgery, especially those that deal with accidents, fractures, orthopedics, urology and roentgenology, if for no other reason, at least for the training of students and assistants.

Professor König, of Wurzburg, read an exhaustive paper on surgery and cancer control in which he took issue with those who were too pessimistic of the situation. Cancer of the stomach has the highest rate of cancer mortality with about 50 per cent. According to his computations, surgery performed on stomach cancers reduces mortality to 10 per cent. From 50 to 60 per cent of stomach carcinomas and 80 per cent of carcinomas of the rectum admit of surgical therapy. The important thing was to treat the disease in its early stages. The reason why results were reported covering only relatively short periods was principally that statistics do not extend sufficiently over larger periods of time. According to recent statistics based on investigations and inquiries made by seven well known hospitals, 424 of 1,260 former carcinomatous patients were designated as cured and free from ailments after from ten to twenty-five years. In considering these figures, one ought also to take account of the fact that a considerable number of those operated on for carcinoma had in the meantime died of other diseases. The number of those surgically cured of cancer would therefore be greater. The figures furnished by Professor Laewen, of Königsberg, by way of illustration are illuminating. Between 1935 and 1939, 18,864 female patients were examined serially for carcinoma of the breasts. Only 800 had new cancerous growths. In 3,767 gynecologic examinations, only four new carcinomas of the collum, one of the rectum and 106 suspected cases of the portio were discovered. Guleke, of Jena, found only thirteen verified cancerous formations in 200 similar examinations. A motion to organize special tumor clinics in Germany did not meet with the approval of the society. Other papers dealt with arthritis deformans, with treatment to be employed in bone fractures and with orthopedic problems.

Marriages

WILLIAM THOMAS HENDRIX, Spartanburg, S. C., to Miss Mary Emily Parker at Emory University, Ga., July 22.

RICHARD PHILIP CUSTER, Philadelphia, to Mrs. Claire Payzant Lohrke of Dartmouth, N. S., Canada, recently.

ROGER SHERMAN DOWNS, Saratoga Springs, N. Y., to DR. ELINOR WHITNEY FOSDICK of New York, recently.

JAMES ROBERT FITZGERALD to Miss Myra Marcelle Sullivan, both of Chicago, at Davenport, Iowa, August 7.

WILLIAM C. HUFFMAN, Clarksburg, W. Va., to Miss Henrietta Claxon of Lawrenceburg, Ky., August 29.

WALTER WATSLO ANTHONY VINKS to Mrs. Almary Seifert Lee, both of Lincoln, Calif., in Chicago, June 12.

JOHN WINSTON ADAMS JR., Chandler, Okla., to Miss Margret Emily Harvey of Memphis, Tenn., July 17.

CLARENCE ALEXANDER KINNEY, Florence, S. C., to Miss Rosalie West Parks of Bennettsville, August 26.

BERNARD B. NEUCHILLER, Woodstock, Ill., to Miss Doris Purcell of Equality in Chicago, September 2.

WILLIAM S. MUSE, Lexington, Tenn., to Miss Loretta Greaney, of Worcester, Mass., September 2.

THOMAS A. GONDER JR., Milton, Mass., to DR. SARAH HIGGINSON BOWDITCH of Oakland, Md., recently.

ROBERT GEORGE HEASTY, Wichita, Kan., to Miss Harriet Taliaferro Allen of Danville, Ky., July 22.

ROBERT BEALL HIGHTOWER, Washington, D. C., to Miss Rossell MacDonald of Norton, Va., July 20.

FREDERICK R. DETTLOFF, Cloverdale, Ind., to Miss Kathryn Atkinson of Bloomington, September 30.

DONALD LURTON AREY, Danville, Va., to Miss Beverly Jeanne Barclay at Hempstead, N. Y., August 2.

FRED G. PATTERSON, Chapel Hill, N. C., to Miss Julia Baylor Shirley of Richmond, Va., September 5.

LEWIS EARL FRASER, Edmonton, Ky., to Miss Alice Jean Keith in Carthage, Miss., September 20.

HERMAN W. FARBER, Weldon, N. C., to Miss Henrietta Salsbury of Richmond, Va., August 30.

WILLIAM RAYMOND HAWKINS to Miss Hiawatha Louder, both of South Fork, Pa., September 4.

STEPHEN T. MANONG, Chamberlain, S. D., to Miss Gertrude Miriam Roe of Jackson, Mich., July 9.

JOHN COLE BURWELL JR., Greensboro, N. C., to Miss Jeannette Dorst of Austin, Minn., July 22.

JAMES EDWARDS CAMERON, Alexandria City, Ala., to Miss Edith Ellison at Hurtsboro, August 1.

WILLIAM RAY MOORE to Miss Elizabeth Anderson Mason, both of Louisville, Ky., September 8.

NORMAN E. BASINGER to Miss Rosemary Williams, both of Elyria, Ohio, in Cleveland, June 26.

ROBERT MONROE MCMILLAN, Candor, N. C., to Miss Dorothy Burchfield of Danville, Pa., July 12.

JOHN D. FITZGERALD, Roxboro, N. C., to Miss Betty Kathlyn Offerman of Durham, September 5.

ROBERT F. DEARBORN, Orangeville, Ill., to Miss Barbara Burritt of Rockford, September 2.

EDWIN HALE THORNHILL, Durham, N. C., to Miss Pattie Marie Sills of Nashville, July 21.

RUTH EVANS BRINKER, Keokuk, Iowa, to Mr. Dan R. Hamady of Flint, Mich., July 29.

RANDOLPH PATTON MOORE, Lisbon, Ohio, to Miss Carol Barthelmez of Cleveland, July 22.

THEODORE J. BRUEGGE, Kokomo, Ind., to Miss Catherine Lynch in Indianapolis, August 5.

GEORGE STREET MCREYNOLDS JR. to Miss Sheddie Usher, both of Philadelphia, August 29.

JAMES HOMER LEIGH to Miss Kathryn Parks, both of Philadelphia, Miss., August 17.

JOSEPH L. HUNSBERGER to Miss Elizabeth Williams, both of Norristown, Pa., August 26.

ROBERT E. STONE, Chapel Hill, N. C., to Miss Frances Blakeney of Monroe, July 31.

WALTER LEE BRANDON to Miss Christina Ann Stewart, both of Poplar Bluff, Mo., July 7.

LUKE DENNIS GARVIN to Miss Helen Jane Chisholm, both of Bradford, Pa., October 7.

RUSSELL L. FINCH, Lansing, Mich., to Miss Althea L. Wysong of Holt, August 12.

WILLIAM LOUIS MCLEOD to Miss Margaret Bland, both of Buies Creek, N. C., July 15.

JOHN W. BRADBURY to Miss Octavia Martinell, both of Galveston, Texas, August 5.

FRANK A. INDA, Omaha, to Miss Margaret M. Powers of Little Falls, N. Y., recently.

D. FOREST MOORE, Shelby, N. C., to Miss Eleanor Lyon Morton of Terrell, July 26.

HENRY EDWARD HENGEN, Amherst, Ohio, to Miss Grace Null of St. Louis, July 24.

LEROY W. CHILDS, Atlanta, Ga., to Miss Nancy Williams, Lake Kerr, Fla., August 5.

WILLARD E. FISCHER, Detroit, to Miss Barbara Jeanne Coan of Gladwin, Mich., July 29.

TIMOTHY F. P. LYONS, Boston, to Miss Anna Doherty of Milton, Mass., recently.

JULIUS FOLDES, Nanticoke, Pa., to Miss Mary Murphy of Oak Lane, August 19.

WILLIAM J. DONALD, Brewton, Ala., to Miss Vivian Frazier of Mobile, August 4.

ARTHUR FEITELL to Miss Freda Joyce Prichap, both of New York, September 12.

HAROLD ABRAMSON to Miss Lucy Kahn, both of New York, August 10.

Deaths

Algernon Coolidge ✠ Boston; Harvard Medical School, Boston, 1886; clinical instructor of laryngology, 1893-1906, assistant professor, 1906-1911, professor, 1911-1925, and since 1925 professor emeritus at his alma mater; professor of laryngology emeritus at the graduate school; member of the New England Otological and Laryngological Society and the American Clinical and Climatological Association; past president of the American Laryngological Association; fellow of the American College of Surgeons; for many years on the staff of the Massachusetts General Hospital; author of "Diseases of the Nose and Throat" published in 1915; aged 79; died, August 16, of heart disease and arteriosclerosis.

Wilbur Ashley McPhaul ✠ Jacksonville, Fla.; University of Nashville (Tenn.) Medical Department, 1904; state health officer; served as health officer of Robeson County, N. C.; in 1919 was director of rural sanitation work with the Alabama State Board of Health, becoming in the same year health officer of Montgomery; in 1920 was appointed health officer of Charlotte, N. C.; in 1931 he resigned to become field director of the U. S. Public Health Service; health officer of Pensacola for many years; at one time member of the state legislature of North Carolina; past president of the Florida Public Health Association; aged 60; died, August 1, in a local hospital.

Lawrence Taylor Price ✠ Richmond, Va.; Medical College of Virginia, Richmond, 1903; emeritus professor of clinical urology at his alma mater; president of the Virginia Urological Society; member of the American Urological Association; urologist to the Johnston Willis Hospital; on the staffs of the Memorial, St. Philip, Dooley and City Home hospitals, Retreat for the Sick Hospital and Tucker Sanatorium; consultant urologist to the Pine Camp Hospital, Brook Hill, Southside Community Hospital, Farmville, and the Westbrook Sanatorium; aged 58; was killed, August 15, when he fell from a fifth story window.

Maurice Joseph Gelpi, New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1911; fellow of the American College of Surgeons; past president and secretary of the Orleans Parish Medical Society; instructor and assistant professor of gynecology at his alma mater, 1911-1916; professor of surgery, Loyola Post Graduate Medical School in 1921; editor in chief of the *New Orleans Medical and Surgical Journal* from July 1922 to June 1923; aged 56; served in various capacities on the staffs of the Charity Hospital and the Hotel Dieu, Sisters' Hospital, where he died, August 9, of cardiovascular disease and cerebral hemorrhage.

Frederick Stauffer, Monterey, Calif.; Kentucky School of Medicine, Louisville, 1893; member and past president of the Utah State Medical Association; formerly member and president of the Utah State Board of Health and Salt Lake County Medical Society; member of the American Academy of Ophthalmology and Otolaryngology; member and past president of the Pacific Coast Oto-Ophthalmological Society; fellow of the American College of Surgeons; surgeon to the Dr. W. H. Groves Latter-Day Saints Hospital, Salt Lake City, for many years; aged 72; died, July 20.

Pio H. Laporte, Edmundston, N. B., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1901; minister of health and labor for the New Brunswick government; past president of the New Brunswick Medical Society; New Brunswick representative on the Medical Council of Canada; for many years mayor of the town and chairman of the school board; aged 59; died, July 29, in a hospital at St. Basile, of injuries received in an automobile accident.

Louis Mervin Maus ✠ Colonel, U. S. Army, retired, Rockville, Md.; University of Maryland School of Medicine, Baltimore, 1874; entered the army as assistant surgeon in 1874 and rose through the various positions to that of colonel in the medical corps in 1907; veteran of the Spanish-American and World wars; was awarded the Distinguished Service Medal for service among the Indians; retired May 8, 1915, by operation of law; aged 88; died, August 3, of obstructive jaundice.

Frederick Eugene Trotter ✠ Honolulu, Hawaii; University of Virginia Department of Medicine, Charlottesville, 1895; member of the House of Delegates of the American Medical Association in 1924 and 1930; commissioner of the Hawaii Board of Health and past president; past president of the State and Provincial Health Authorities of North America; veteran of the Spanish-American War; formerly surgeon in the U. S. Public Health Service; aged 66; died, August 7, of heart disease.

John Andrew Evert ✠ Glendive, Mont.; University of Minnesota Medical School, Minneapolis, 1913; past president of the Medical Association of Montana and past president and secretary of the Eastern Montana Medical Association; fellow of the American College of Surgeons; served during the World War; chief surgeon of the Northern Pacific Hospital; aged 54; died, August 17, of plasma cell myeloma.

James Homer Buckley ✠ Fort Smith, Ark.; Tulane University of Louisiana School of Medicine, New Orleans, 1896; member of the American Academy of Ophthalmology and Otolaryngology; past president of the Sebastian County Medical Society; on the staffs of St. Edward's Mercy and of the Sparks Memorial Hospital; aged 64; died, July 31, of heart disease.

William Lytle Ross ✠ Omaha; Rush Medical College, Chicago, 1883; Bellevue Hospital Medical College, New York, 1887; member of the Radiological Society of North America; professor of dental neurology at the Creighton Dental College, 1905-1922; aged 80; died, August 26, in the Nicholas Senn Hospital of carcinoma of the head of the pancreas.

Graham Wall Diggs, Wetumka, Okla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1905; member of the Oklahoma State Medical Association; formerly secretary of the Hughes County Medical Society; mayor of Wetumka; served during the World War; aged 59; died, August 18, in the Veterans Administration Facility, Muskogee.

Robert Swan Killough ✠ Amarillo, Texas; Eclectic Medical Institute, Cincinnati, 1896; fellow of the American College of Surgeons; past president of the Potter County Medical Society; aged 72; on the staffs of the Northwest Texas Hospital and St. Anthony's Sanitarium, where he died, August 24, of a fractured hip received in a fall.

Thomas Sampson Royster ✠ Henderson, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1916; fellow of the American College of Surgeons; at one time passed assistant surgeon lieutenant in the United States Navy; on the staff of the Maria Parham Hospital; aged 48; died, August 1, of coronary thrombosis.

John Buis ✠ Pender, Neb.; University of Nebraska College of Medicine, Omaha, 1907; past president of the Cedar-Thurston-Wayne-Dixon-Dakota Counties Medical Society; served during the World War; aged 60; died, August 7, in the Immanuel Deaconess Institute, Omaha, of Hodgkin's disease and cerebral hemorrhage.

Robert Lee Kunkle, Piqua, Ohio; Ohio Medical University, Columbus, 1902; member of the Ohio State Medical Association; served during the World War; formerly city physician and health officer; aged 63; on the staff of the Memorial Hospital, where he died, August 2, of cirrhosis of the liver.

Barrick Samuel Rankin ✠ Kingwood, W. Va.; Baltimore Medical College, 1907; past president of the Preston County Medical Society; at one time member of the state legislature; served during the World War; formerly superintendent of the state hospital at Spencer; aged 67; was drowned, August 22.

Frederick William Hagney ✠ Newark, N. J.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1893; aged 71; on the staff of Hospital of St. Barnabas and for Women and Children, where he died, August 26, of chronic myocarditis and arteriosclerosis.

Joseph Hubbard Saunders ✠ Williamston, N. C.; University College of Medicine, Richmond, 1905; past president of the Martin County Medical Society; served during the World War; formerly county health officer; aged 56; died, August 3, in a hospital at Richmond, Va., of hepatitis.

Thomas Leo Caldroney, Ridgefield Park, N. J.; University and Bellevue Hospital Medical College, New York, 1917; member of the Medical Society of New Jersey; on the staff of the Hackensack (N. J.) Hospital; aged 46; died, August 2, in Pompton Lakes of acute coronary thrombosis.

Alden J. Brace, Vici, Okla.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1900; member of the Oklahoma State Medical Association; aged 66; died, August 7, in the Shattuck (Okla.) Hospital following an operation for ruptured appendix.

Emil George Vrtiak ✠ Chicago; Rush Medical College, Chicago, 1920; associate clinical professor of medicine at his alma mater; on the staff of the Lutheran Deaconess Home and Hospital; aged 48; died, August 7, in the Presbyterian Hospital of coronary thrombosis.

John H. Colay, Morrilton, Ark.; University of Arkansas School of Medicine, Little Rock, 1911; member of the Arkansas Medical Society; aged 58; on the staff of St. Anthony's Hospital, where he died, August 16, of injuries received when he fell down an elevator shaft.

John Thomas Denton, Sanford, Fla.; Memphis (Tenn.) Hospital Medical College, 1902; member of the Florida Medical Association; formerly secretary of the Seminole County Medical Society; aged 60; died, August 3, in the Greenville (S. C.) General Hospital.

Robert Newhall Smith, Hollis, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1897; aged 67; died, July 30, of a streptococcic infection resulting from a fall which forced the pipe he was smoking through the back of his throat.

Joseph Ambrose Brady, New York; Long Island College Hospital, Brooklyn, 1903; member of the Medical Society of the State of New York; on the staffs of the Misericordia Hospital and St. Vincent's Hospital; aged 62; died, August 26, of heart disease.

Gaston Day, Jacksonville, Fla.; Johns Hopkins University School of Medicine, Baltimore, 1906; member of the Florida Medical Association and the American Society of Anesthetists; served during the World War; aged 57; died, August 5, of coronary occlusion.

Edward Augustus Stratton ✠ Danbury, Conn.; University of the City of New York Medical Department, 1883; fellow of the American College of Surgeons; surgeon to the Danbury Hospital; aged 77; died, July 9, of carcinoma of the stomach.

Henry William Held, Vincennes, Ind.; Medical College of Ohio, Cincinnati, 1894; member of the Indiana State Medical Association; formerly county coroner; aged 69; died, August 9, in the Good Samaritan Hospital of diabetic gangrene.

Robert Lee Cater Jr., Greensboro, N. C.; Emory University School of Medicine, Atlanta, Ga., 1916; member of the Medical Society of the State of North Carolina; aged 44; was found dead, August 8, of acute dilatation of the heart.

John Frederick Cumming, Morris, Minn.; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1922; member of the Minnesota State Medical Association; aged 41; died, July 12, of hypertension and cerebral hemorrhage.

James Allen Ballard, San Francisco; University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1904; served during the World War; on the staff of the Veterans Administration Facility; aged 54; died, July 5.

Edward B. Kaple, Camillus, N. Y.; Cleveland University of Medicine and Surgery, 1895; past president of the Onondaga County Medical Society; for many years on the staff of the Syracuse Memorial Hospital; aged 66; died, July 26.

Hudson D. Bishop ✠ Cleveland; Homeopathic Hospital College, Cleveland, 1890; formerly professor of surgery at his alma mater; for many years on the staff of the Maternity Hospital; aged 72; died August 17, of heart disease.

Oliver James Wood, Cleves, Ohio; Miami Medical College, Cincinnati, 1883; past president of the county board of health and the Cleves-North Bend school district; aged 87; died, August 8, of arteriosclerosis and heart disease.

Rufus Joel Danner, Terre Haute, Ind.; Kentucky University Medical Department, Louisville, 1901; member of the Indiana State Medical Association; served during the World War; aged 65; died, August 26, of heart disease.

Joseph Maurice Allen, Rosholt, S. D.; Hamline University Medical Department, Minneapolis, 1901; aged 72; died, August 8, in St. Francis Hospital, Breckenridge, Minn., of gangrenous appendicitis and coronary occlusion.

Oliver S. Olson, Gary, Ind.; University of Illinois College of Medicine, Chicago, 1912; member of the Indiana State Medical Association; served during the World War; aged 55; died, August 20, of carcinoma of the intestine.

Delbert Frederick Dumas, Bemidji, Minn.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; aged 60; died, August 8, of hypertensive heart disease and cerebral thrombosis.

Nathan Browne Hammond, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1903; demonstrator of pharmacy, 1905-1910, and lecturer, 1910-1911, at his alma mater; aged 62; died, July 18.

Calvin Ashley Traver, North Little Rock, Ark.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1897; aged 66; died, July 30, of pneumonia, intestinal obstruction and appendicitis.

Michael A. Cohn, San Diego, Calif.; College of Physicians and Surgeons, Baltimore, 1893; member of the Medical Society of the State of New York; aged 71; died, July 10, at La Jolla.

Albert E. Hussey, Cincinnati; Medical College of Ohio, Cincinnati, 1901; formerly connected with the U. S. Veterans Bureau; aged 59; died, August 1, of cerebral hemorrhage.

Frederick Walter Mason, Brandon, Vt.; Keokuk (Iowa) Medical College, 1897; aged 64; died, August 7, in a hospital at Rutland of gastric hemorrhage and diabetes mellitus.

Clarence Earl Hamel, Kalispell, Mont.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; aged 66; died, July 29.

Frederick Elisher Salvage, La Moure, N. D.; Rush Medical College, Chicago, 1892; member of the North Dakota State Medical Association; aged 72; died, July 14.

Ida Rebecca Brigham, Brookline, Mass.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1884; aged 89; died, July 3, of coronary sclerosis.

James Cannon Greene, Greenville, N. C.; Medical College of Virginia, Richmond, 1900; aged 70; died, August 15, in the Pitt General Hospital, of chronic myocarditis.

Henry John Abele, Lakewood, Ohio; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1898; aged 80; died, August 4, of heart disease.

William Albert Berry, Chicago; Rush Medical College, Chicago, 1903; aged 60; on the staff of St. Bernard's Hospital where he died, August 26, of angina pectoris.

William G. Ferguson, Rockville Centre, N. Y.; Fort Wayne (Ind.) College of Medicine, 1891; formerly school physician in Fort Wayne, Ind.; died, July 31.

Arthur Peter Shellman, Binghamton, N. Y.; University of the City of New York Medical Department, 1894; aged 69; died, July 16, of coronary thrombosis.

Louis H. Graham, Waxahachie, Texas; Louisville (Ky.) Medical College, 1889; member of the State Medical Association of Texas; aged 76; died, August 6.

Robert Brown Whiteside, Lott, Texas; College of Physicians and Surgeons, Baltimore, 1889; aged 73; died, July 28, of cerebral hemorrhage and arteriosclerosis.

La Forest Ethelbert Phillips ✠ Palo Alto, Calif.; Cooper Medical College, San Francisco, 1899; on the staff of the Palo Alto Hospital; aged 63; died in July.

Adam Henry Straub, Brooklyn; Long Island College Hospital, Brooklyn, 1889; aged 73; died, July 2, in the Wyckoff Heights Hospital, of diabetes mellitus.

John Darius Jackson, Perryville, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1881; aged 80; died, July 25, in Terrell of senility.

Noble Hind Hill, Boston; Boston University School of Medicine, 1892; aged 79; died, July 13, in the Boston City Hospital, of cerebral thrombosis.

Frank Walters Stuart, Seattle; Homeopathic Hospital College, Cleveland, 1890; aged 82; died, July 26, of cerebral hemorrhage and hypertension.

Henry Hertel, East St. Louis, Ill.; St. Louis Medical College, 1878; member of the Illinois State Medical Society; aged 89; died, August 22.

Mary Elizabeth Rosenberg Nelson, San Diego, Calif.; University of Nebraska College of Medicine, Omaha, 1897; aged 83; died, July 15.

William D. Mace, La Fayette, Ind.; Medical College of Indiana, Indianapolis, 1889; aged 71; died, July 31, of acute dilatation of the heart.

Sae T. Greenberg, Cleveland; Medizinische Fakultät der Universität, Wien, Austria, 1908; aged 59; died, July 19, of coronary thrombosis.

Frank R. Falby, Charlotte, Vt.; Baltimore Medical College, 1897; aged 72; died, July 30, of cerebral hemorrhage and arteriosclerosis.

David Scott Hoig, Oshawa, Ont., Canada; University of Toronto Faculty of Medicine, 1880; aged 85; died, August 7.

Moses Wiesh, San Antonio, Texas; Missouri Medical College, St. Louis, 1897; aged 85; died, August 14, of myocarditis.

C. C. Witt, Lake City, Fla.; Medical College of the State of South Carolina, Charleston, 1909; aged 55; died, July 19.

Charles Warwick McVicar, Winnipeg, Man., Canada; Manitoba Medical College, 1924; aged 38; died, August 12.

Sidney A. Hoesman, Cozaddale, Ohio; Cincinnati College of Medicine and Surgery, 1901; aged 79; died, August 4.

Bureau of Investigation

TWO ABORTIFACIENTS BARRED

1. Cosmo Carrano and His D. M. C. Pills

From New Haven, Conn., Cosmo Carrano, a quack said by government officials to have a criminal record, did a medical mail-order business under the trade style "Oceanview Medical Products" selling "D. M. C. Pills." In the opinion of Judge Vincent M. Miles, Solicitor for the Post Office Department, it was apparent that the advertising of this product indicated that it was an abortifacient. As he put it: "The evidence in this case shows that it is the promoter's [Cosmo Carrano's] intention to hold out his preparation as an abortifacient and that he is selling it through the mails for that purpose."

Carrano, according to Judge Miles's memorandum, had previously been convicted on five different occasions of

FREEDOM from WORRY
EVERY MONTH
D.M.C.
VEGETABLE PILLS
are
Helping Thousands of Women!
If you are Troubled with Delay, do not take chances with your Health. Pain and Worry are Dangerous. Neglect may cause sorrow. Use D.M.C. Vegetable Pills. They often end longest overdue, abnormally delayed periods without Pain or worry. ACT OVERNIGHT. Have been used by thousands of women throughout the Country for over 30 years, with remarkable satisfactory results. Recommended by the Medical Profession because they are compounded of Pure and Harmless ingredients, Strictly according to U.S.P. Standards and will not produce any ill after effects. D.M.C. Vegetable Pills hardly fail to bring about the desired results. They act faster and safer than many other remedies. Once you have used them, you will use no other. DON'T WAIT another day. Send for Old Reliable D.M.C. Vegetable Pills NOW. Experience that glorious feeling that comes from perfect health and Freedom from Pain & Worry.
Full Strength $2.00 a Box or two Boxes for $3.00 Special formula double strength for obstinate cases $3.00 a Box or two for $5.00 Will be sent to you postpaid in sealed package same day order received. C.O.D. orders 15¢ extra. Send cash with order and save C.O.D. fee.
FREE
HEALTH INSTRUCTIONS Sent With Each Order.
CLIP THIS COUPON AND MAIL NOW
OCEANVIEW MEDICAL PRODUCTS, BOX 1709, NEW HAVEN, CONN.
Gentlemen:
Full Strength
Double Strength
Enclosed find ____ for ____
Name ____
Address ____
City ____ State ____
Oceanview Medical Products
Box 1709, New Haven, Conn.
Ladies Dept. M3-1-DP.

Some of Carrano's advertising.

possessing, selling or shipping obscene matter. According to the same memorandum, the Post Office Department issued a fraud order against Carrano in March 1936 for operating a mail-order swindle in the sale of books, pictures and cartoons.

In 1937, according to material in the files of the Bureau of Investigation of the American Medical Association, Carrano entered into a stipulation with another government agency, the Federal Trade Commission, to "discontinue representing directly or by reasonable implication that his preparation [D. M. C. Vegetable Pills] is an abortifacient." But Carrano was still selling his D. M. C. pills in 1939 when the Post Office Department again took a hand. He was called on to show cause on Feb. 23, 1939, why the postmaster at New Haven should not be instructed to stamp all mail addressed to Oceanview Medical Products "FICTITIOUS" and return all such mail to the senders or else send it to the Division of Dead Letters at Washington.

On February 21 Carrano's attorney, Walter J. McCarthy of New Haven, addressed a letter to the Post Office Department, stating that his client would be willing to sign a stipulation—another one!—agreeing to discontinue his scheme. Naturally the Post Office officials took the attitude that, as they put it, "no reliance might be placed upon any promise" made by Carrano. Mr. McCarthy was notified that a hearing would be held at Washington on February 28. On that date Mr. McCarthy appeared on behalf of Carrano and a hearing that consumed half a day was held.

As Judge Miles brought out in his memorandum to the Postmaster General, Carrano's published testimonials were "shown to be from married women and indicate that the preparation [D. M. C. pills] sold in this scheme had relieved cases of delayed menstruation of two months and over, the inference being throughout such testimonials that the preparation [D. M. C.] actually accomplished abortion in such instances." The memorandum further stated that in a number of instances *Carrano had sent his D. M. C. pills through the mails in cases in which they were expressly ordered for the purpose of effecting an abortion.* (Italics ours—ED.)

The evidence showed, according to the memorandum, that Cosmo Carrano was violating 18 U. S. Code 339 and 334, statutes that specifically prohibit the advertising and sale through the mails of any matter to be used for the purpose of producing abortion. On March 6, 1939, the mails were closed to Oceanview Medical Products.

2. "Bornock's Tablet Treatment"

On Jan. 21, 1939, Olaf M. Bornstad of Minneapolis was called on by the Post Office Department to show cause why the postmaster at Minneapolis should not be instructed to stamp all mail addressed to Bornstad's "Bornocks Company" as "FICTITIOUS" and either return it to the senders or direct it to the Division of Dead Letters at Washington.

On January 28 Bornstad's attorney, Olaf L. Bruce of Minneapolis, wrote the Post Office Department a letter in which he transmitted a statement from Bornstad, waiving a hearing and indicating a willingness to have all mail addressed to his company returned to senders. In the memorandum to the Postmaster General from the Solicitor of the Post Office Department, Judge Vincent M. Miles, it is brought out that Olaf M. Bornstad under the Bornocks Company trade style had been advertising and selling through the mails "Bornock's Tablet Treatment" as a means of producing abortion.

Bornstad solicited business, stated Judge Miles, "by the use of newspaper advertisements" and letters. Unfortunately the names of the newspapers that became *particeps criminis* with Bornstad were not given. On Feb. 15, 1939, the mails were closed to Bornstad's trade style, Bornocks Company, and its officers and agents as such, because the business was a violation of 18 U. S. Code 339 and 334.

THE INDIAN DRUG STORE FRAUD

From March 1934 until Jan. 17, 1939, Armon S. Compton of Philadelphia, who is said to claim that he is a pharmacist, had been selling two nostrums through the mails. The "patent medicines" in question were called, respectively, "Presta Tablets" and "Re-Gens Tonic Compound." These were sold not under Compton's own name but under the trade style "Indian Drug Store." The location was 1440 South Street and it appears that it was a small "botanical drug store" from which Compton also sold locally a general line of herbs.

Presta Tablets were supposed to restore lost sexual vitality, while Re-Gens Tonic Compound was apparently recommended for everything from hot flashes to cold feet. When analyzed the tablets were reported to contain damiana, strychnine, zinc phosphide, iron (ferric) oxide and a small amount of the inevitable cantharides (Spanish flies). The tablets were supposed to cure lost sexual vitality whether the condition was due to tuberculosis, diabetes, venereal disease, old age or to psychic causes.

The Re-Gens Tonic was reported on analysis to contain gentian, iron (ferric) oxide, salicylic acid and epsom salt—especially epsom salt—and a little calcium, sodium and potassium. The stuff was essentially a laxative. As such a mixture would not "keep your Blood, Stomach, Liver, Kidneys and Bowels in good condition" and would not enable persons to

"avoid Constipation, Dyspepsia, Sour Stomach, Bad Breath, Malaria, Sick Headache, Kidney Troubles, Liver Complaint, Loss of Appetite, Rheumatism, Lame Back, Impure Blood, Pimples, Eczema, Boils" and so on, the scheme was declared a fraud and the mails were closed to the Indian Drug Store on the date given in the opening paragraph.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

HYPOTENSION

To the Editor:—**A woman of 45 who is otherwise healthy has a blood pressure of 80/42. What should be done to raise this blood pressure? Would thyroid extract be indicated?**

I. Herman, M.D., Newark, N. J.

ANSWER.—It has been customary to separate chronic arterial hypotension into two types (primary, or essential, and secondary), but such distinction is largely arbitrary. The pathogeneses and disturbed homeostatic mechanisms are alike; the conditions differ only in obviousness of etiology. In some instances of habitual hypotension the causation is fairly obvious and in others obscure. The etiology of hypotension involves numerous factors. These are divisible into predisposing (constitutional) factors and provoking (initiating) influences. In clinical instances in which the provoking factors are obscure the predisposing causes usually predominate (Stieglitz, E. J.: Abnormal Arterial Tension, New York, National Medical Book Company, Inc., 1935).

To be effective, therapy must be based on correction or amelioration of the cause. In the present instance it must be assumed that no obvious intoxications, infections, dehydration or metabolic disturbances exist and that the hypotension is habitual and continuous rather than merely evidence of a transient depression of vascular tone. Careful search for sources of intoxication such as foci of infection, prolonged fatigue, tuberculosis and habitual use of depressant drugs should be conducted. Excessive self medication with any of the many generally available barbiturates, bromides and other sedatives is not an infrequent factor in habitual hypotension, but it is rarely admitted by the patient. The cardiac reserve is an important consideration, and one would wish to know the circulatory response to effort and the character and rate of the pulse. Should such clinical studies fail to elicit evidence as to the causation of the hypotension, then and only then supportive and stimulative therapy is justified.

Hypotension per se is not a disease. It is a physiologic state deviating from the accepted normal. Moderate hypotension may be and often is perfectly compatible with health and well-being. Only when hypotension is sufficient to impair circulatory efficiency and cause symptoms is one justified in instituting therapy; it is with the patient and not with the level of arterial tension that one should be concerned. Rest is probably the most effective measure. Hypotensive persons have a distinctly lowered endurance. Fitting the pace of living to the patient's capacity of activity can often do more good than any other measure. This applies to mental and emotional as well as physical strains. The program of daily routine can often be modified to yield short rest periods.

Improvement of nutrition is important. Many of these patients are grossly undernourished, while others are flabby and overweight. A diet planned to prevent constipation is desirable. Anemia, even of minor degree, should be energetically combated. Hypotension is frequently associated with deficient oxygenation. Apocamnosis encourages sedentary habits. Fresh air and exercise appropriate to the patient's strength are valuable.

Drugs are but auxiliaries in the management of habitual hypotension and must not be relied on to the exclusion of other measures. Strychnine sulfate (0.6 mg.) or the oldfashioned but effective elixir of iron, quinine and strychnine before meals may be continued profitably for weeks. Epinephrine has too fleeting an action to be applicable to the control of chronic hypotension; furthermore, it must be administered parenterally. Ephedrine salts and benzedrine have undesirable side effects such as insomnia, cardiac excitation and excessive cerebral stimulation and are thus best avoided. Thyroid extract is definitely indicated when the basal metabolic rate is low. It should never be prescribed without controlling observations of the basal metabolic rate, the pulse rate and the sense of well-being of the patient. Frequently it is tolerated surprisingly well by those whose metabolic rate is normal, and although the rate is but little increased considerable clinical benefit is obtained. The precaution of repeated observations of such patients should not be neglected. Appreciation of the fact that the discovery and correction of the causal influences is of major importance in treatment will insure better therapeutic results. The therapy required for each patient must be individualized.

BILE SALTS

To the Editor:—**Could you give me a formula for a preparation of bile salts to be used in cases of chronic cholecystitis?**

Albert Kaplan, M.D., Koch, Mo.

ANSWER.—Normal human bile obtained from the common or hepatic duct contains approximately 1 per cent of bile salts; in the bile in the gallbladder the concentration is from six to ten times greater. These bile salts consist chiefly of sodium glycocholate, sodium taurocholate, sodium cholate, sodium choleate and some sodium desoxycholate. Other bile salts are present in minute traces and there may also be small amounts of the free bile acids themselves. Ordinarily the ratio between sodium glycocholate and sodium taurocholate in normal human bile is about 3:1.

Ox bile, from which most commercial preparations of bile salts are made, does not differ greatly in composition from human bile in respect to the glycocholate: taurocholate ratio. Theoretically it would be possible to prepare a mixture of bile salts which would correspond closely in composition to that of normal human bile but to do so would be an expensive and difficult process.

Schmidt and his associates (Schmidt, C. R.; Beazell, J. M.; Atkinson, A. J., and Ivy, A. C.: The Effect of Therapeutic Agents on the Volume and the Constituents of Bile, *Am. J. Digest. Dis. & Nutrition* **4**:613 [Nov.] 1938), working on dogs, found that preparations of conjugated bile acids are superior stimulants to the flow of bile and produce an increased excretion of normal biliary constituents. The oxidized unconjugated preparations increase the aqueous fraction of bile but result in an absolute decrease in the output of natural bile acid.

FORMATION OF GALLSTONES IN COMMON DUCT

To the Editor:—**At a recent meeting the following questions elicited considerable discussion: Do stones form in the common duct of previously cholecystectomized patients or were such stones present and undiscovered at the time of operation? Why is symptomatic relief more pronounced when the gallbladder with stones is removed than when the "stoneless" or nonfunctioning gallbladder is taken out?**

J. E. Morgan, M.D., Cleveland.

ANSWER.—It is probable that most stones found in the common duct of previously cholecystectomized patients represent stones that were present and undiscovered at the time of the original operation. There is conclusive evidence that stones may grow in the common duct and reach a large size and that then, following their removal, a recurrence of similar large stones may take place, even though the gallbladder has been previously removed.

According to the observations of Phemister, Aronsohn and Pepinsky (*Ann. Surg.* **109**:161 [Feb.] 1939), stone formation in the common duct is usually preceded by stone formation in the gallbladder and is set up after calculi have passed into the common duct with the resultant obstruction and infection. Rarely, stone formation may occur in the common duct independent of cholelithiasis, as in cirrhosis of the liver (Judd, McIndoe and Marshall: Surgery of the Biliary System, in Lewis's Practice of Surgery, Hagerstown, Md., W. F. Prior Company, Inc., 1929, vol. 7, chapter 2) or in carcinomatous obstruction of the ducts (Lampert, Ralph, and McFetridge, Elizabeth M.: Carcinoma of the Hepatic Duct, with Report of Additional Case, *Am. J. Cancer* **21**:534 [July] 1934. Marshall, J. M.: Tumors of the Bile Duct, *Proc. Staff Meet., Mayo Clin.* **6**:191-192 [April 1] 1931), and the stones may even form in the intrahepatic ducts. Phemister and his associates found that the stones which form in the biliary ducts are composed almost entirely of cholesterol and bile pigments with scarcely a trace of calcium. This is in sharp contrast to the stones that form in the gallbladder, in which calcium carbonate is commonly present in varying amounts.

Symptomatic relief is usually more pronounced when the gallbladder with stones is removed because in this case it is much more probable that the gallbladder was the original cause of the distress. In many cases, so-called functional intestinal distress or hyperirritability of the colon may quite accurately mimic the symptoms of classic gallbladder disease, and of course these symptoms then persist after the removal of the gallbladder.

The syndrome of biliary dyskinesia is not clearly defined, but it is quite possible that subjective symptoms might be produced by disturbance in the motility of the gallbladder or of the common duct and the sphincter of Oddi, in the absence of stones. The removal of such a gallbladder would clearly not give the relief that is commonly obtained in the presence of cholelithiasis. It is probable that, in most cases in which symptomatic relief is not obtained following cholecystectomy in the absence of gallstones or evidence of cholecystitis, the diagnosis is wrong.

CHORDOTOMY FOR PAIN

To the Editor:—**For painful stump of an amputated thigh a patient was given paraspinal injection, presumably of alcohol. This was made at the third or second lumbar vertebra. The pain in the stump was almost entirely relieved, but in its place there are severe paroxysms of stabbing pain originating at the twelfth thoracic vertebra and radiating along the border of the last rib on both sides. Their severity demands constant sedation with opiates. Will you kindly inform me of the results of laminectomy and of chordotomy, or tell me where I can find these results summarized.**

H. A. Haskell, M.D., Windsor, Calif.

ANSWER.—Properly done by one experienced in procedures of neurologic surgery, chordotomy should completely relieve the patient of the pain. A small laminectomy should be done and a chordotomy performed at least four cord segments above the highest segment of pain distribution. With bilateral section of the pain-conducting pathways, between the dentate ligaments and the anterior roots, there will be a loss of pain and temperature sensibility below the level of the section but touch, pressure, position and vibratory sensibilities will not be impaired. The knife should pass completely through the white matter, between the landmarks named and well into the gray matter of the cord. With a careful operation, avoidance of hemorrhage around or in the cord and proper closure of the dura mater and muscles, there should be no loss of sphincter control or any motor weakness. In such a case chordotomy is no doubt preferable to posterior rhizotomy.

RHEUMATIC FEVER AND APHONIA

To the Editor:—**A 4 year old girl has acute rheumatic fever of ten days' duration. She has received methyl salicylate externally and sodium salicylate internally in 5 grain (0.3 Gm.) doses four times a day, which has produced mild gastric symptoms and ringing in the ears when increased to five times a day. A slight but definite aphonia and some difficulty in swallowing has developed, the vagus being probably involved. There is no evidence of cardiac involvement other than rapid pulse. It would be greatly appreciated if you could suggest any therapy other than what is being given for the general condition and likewise any suggestions as to the mechanism of the vagus involvement and its treatment.**

Charles H. Morhouse, M.D., Mitchelfild, L. I., N. Y.

ANSWER.—None of several authorities consulted have noted aphonia as a complication of rheumatic fever. In the presence of aphonia a reconsideration of the diagnosis may be in order; perhaps rheumatic fever exists coincidentally with some other condition that causes aphonia. Although salicylates in toxic doses may produce a number of neurologic symptoms, aphonia was not included in the list of Hanzlik (1927). Assuming that rheumatic fever with a related aphonia is present, the latter may be due to some local involvement and not necessarily to a disturbance of the vagus, or other cranial nerves may be responsible. Laryngitis occasionally occurs early in the course of rheumatic fever. Rheumatic nodules of microscopic size have been found in almost every tissue of the body. Occasionally, discrete nodules appear on the vocal cords. A serious and rare complication may be an acute diffuse edema of the epiglottis and vocal cords, which at times results in obstructive dyspnea. Aphonia may result from auricular enlargement or, assuming that no other central nerves are involved, one might think of a central (vascular embolic) lesion affecting the nucleus of the vagus nerve in the medulla; but this would necessitate the presence of frank endocarditis. In chorea, which is frequently associated with rheumatic fever, lesions of blood vessels and focal areas of encephalitis may occur. The data given by the correspondent are insufficient for one to make further conjectures as to the diagnosis.

If salicylates are not well tolerated when administered orally, they can be given in water by rectum 10 grains to the ounce (0.65 Gm. in 30 cc.) or in a weak solution of starch. If salicylates are not effective in controlling fever and the articular disease, aminopyrine may be effective. A complete review of the current methods of treatment of rheumatic fever can be found in the Fifth Rheumatism Review (*Ann. Int. Med.* **12:** 1005 [Jan.] 1939).

DILUTION TEST OF KIDNEY FUNCTION

To the Editor:—**Kindly give me the details of the kidney function test in which eight glasses of water are given. Also the interpretation of this test.**

C. G. Bower, M.D., Galesburg, Ill.

ANSWER.—In carrying out the dilution test for kidney function, according to Volhard's technic, the patient empties the bladder on arising and then drinks eight glasses (1,500 cc.) of water or weak tea in the course of from thirty to forty-five minutes. He must remain in bed during the test period of three or four hours and refrain from food or drink. He is asked to urinate every half hour, keeping each urine in a separate container. The volume and specific gravity of the individual urines are measured. Normally, excretion of the ingested fluid is complete within two or three hours, at the most in four hours. More important as an index of normal renal function is the variation in the volume and specific gravity of the half hour urines. The largest half hour output may reach from 500 to 1,000 cc. (1 pint to 1 quart), with the specific gravity as low as 1.001. With impairment of renal function the first change is the reduction of the maximum half hour output and failure of a sharp fall in the specific gravity. Later the total four hour volume falls below the intake of fluid, and, finally, the half hour samples become small and uniform both in volume and in specific gravity.

While the test is exceedingly simple, interpretation may be difficult in the case of an abnormal outcome, because the response of the body to a single large volume of water is determined by extrarenal as well as by renal factors. Thus, in the presence of cardiac or renal edema and even when there is only a tendency to edema, as in early cardiac failure and in the later months of pregnancy, much of the ingested fluid may be retained, although there may still be considerable variation in the half hour urines. Any form of dehydration preceding the dilution test may seriously disturb the results. Thus fever, diarrhea, excessive perspiration and other conditions must be taken into account. The amount of salt in the diet on the day preceding the test may also affect the excretion of the water given. In most cases it becomes necessary to carry out a concentration test in order to obtain a reliable measure of renal function. It is evident that the dilution test may be a dangerous procedure in cases of increasing cardiac failure and pulmonary congestion, or with severe hypertension and symptoms of encephalopathy, or in acute nephritis with oliguria and progressive edema. On the whole, the dilution test is not reliable and should be supplanted by the concentration test.

PROLONGED CARDIAC INVALIDISM IN CHILDREN

To the Editor:—**I would appreciate your advice and your listing of schools, if any, for a boy aged 16 with rheumatic heart disease who is mentally alert but rebels daily that he cannot work. The condition of his heart is poor. At present he is in bed with rheumatic fever. His parents, not too wealthy, are willing to do anything to alleviate his boredom. I suggested a cardiac school, but I don't know whether there are any, and, if there are, where they are. Thank you for any help you can give me. The boy lives in Vermont.**

M.D., Lynn, Mass.

ANSWER.—One of the difficult problems that has faced those treating prolonged rheumatic infections in childhood has been to maintain the morale and relieve the boredom of the children who have to stay in bed for months or even years.

There are certain hospitals where such children are well cared for over periods of time with an excellent environment and attention to the medical needs of the child. During convalescence recreational therapy and occupational therapy are instituted, but it is not necessary for children to be in such hospitals. They can be adequately taken care of at home if there is an understanding of their needs. The pioneer work of Miss Edith Terry and her associates at the Children's Heart Clinic of the Massachusetts General Hospital (with the help of the Committee for the Home Care of Children with Heart Disease) has resulted in the development of great advances in this field. Information can be obtained from her about the measures which she has introduced.

Among such measures are the establishment of the "In Bed Club" with its magazine, its jacket, its badge and other attri-

butes. Miss Love, who is one of Miss Terry's associates, has become expert in developing the use of the leisure time when the children are not too sick. Although care must be exercised as to the amount of activity of the children in bed in relation to the severity of their acute illness, it is even possible for them while still in bed to earn funds for their family, especially helpful if other members of the family are out of work.

URINARY INCONTINENCE AFTER PROSTATECTOMY

To the Editor:—A white man aged 73 had a transurethral prostatectomy in October 1938. Since then his general condition has been good, except for a generalized arteriosclerosis. Follow-up examinations in the hospital seem to show normal progress. However, a postoperative incontinence developed with a highly alkaline urine. Acidifying agents have failed so far to render the urine acid. The patient has been compelled to wear a urinal, but during the day only. At night he does not wet his bed, even though he is not wearing the urinal. The output during the night (12 midnight to about 9 a.m.) has been much higher than during the day. There is no infection. Since androgenic substance has been found valuable in the treatment of prostatic hypertrophy I should like to know whether it would be of help in correcting the incontinence also. Exercising the sphincter having been suggested already, what else can be done?

M.D., New York.

ANSWER.—The history given indicates that there is probably a urea-splitting organism in the urinary tract. As this contaminant is probably responsible for considerable bladder irritability attention should first be given to its eradication. Since it is almost impossible to acidify the urine in the face of this group of organisms the drug of choice is sulfanilamide, as its best action is in urine of alkaline reaction. Frequently, however, such patients become afflicted with alkaline encrustations on the operative site, which may necessitate instrumental removal either transurethrally or by means of cystotomy. In any event, diagnostic cystoscopy and a gram stain of the centrifuged specimen of urine, or even cultures of the urine, are indicated.

Although many claims have been advanced for androgenic substance it is doubtful if treatment of postoperative incontinence with this agent has ever been successful. However, if the patient does not have hypertension, ephedrine in three-eighths grain (0.024 Gm.) doses once or twice a day may be effective in stimulating the sphincter. Other agents of this type are strychnine in small doses ($\frac{1}{120}$ grain [0.00054 Gm.]) and benzedrine sulfate. Of course it is necessary to calibrate the urethra so that it will accommodate at least a 24F catheter, as strictures are frequent following transurethral resections and may be productive of incontinence. Exercising the sphincter is of definite value. If all of these means are of no avail it may be more convenient for the patient to use a Cunningham clamp than the more cumbersome urinal.

THROMBOSIS OF AXILLARY OR SUBCLAVIAN VEINS

To the Editor:—A man aged 54 sustained a contusion on the left upper arm. Five days later the basilic vein was enlarged and ropelike throughout its entire course. A few days later the entire left arm was cyanotic and swollen, especially the upper arm and hand. The cephalic vein was enlarged and varicosed and the veins on the anterior surface of the chest were also enlarged. After eight weeks of complete rest in bed the basilic vein became normal, but the entire left arm and hand are still generally enlarged and slightly cyanotic, especially when held in a dependent position. The cephalic vein is still enlarged and varicosed and the veins on the chest, while less pronounced, are still enlarged. From the symptoms, it appears that the thrombosis has extended to and involved the axillary or subclavian vein. The patient has been given increasing doses of potassium iodide and is now permitted to use the left arm for light duty. As the original injury occurred four months ago, what should be the prognosis and what treatment should be prescribed? May the moderate use of alcohol and tobacco be permitted?

M.D., Missouri.

ANSWER.—The description of the case permits the diagnosis of a thrombosis of the axillary or possibly subclavian vein with the characteristic collateral circulation on the chest wall and an increase of venous pressure in the superficial veins of the arm. It would be advisable to determine the location of the venous obstruction by an intravenous injection of an opaque, iodine-containing solution such as neo-iopax or hippuran. A block of the sympathetic fibers going to the arm might be done to see how much of the swelling and cyanosis is due to a reflex vasoconstriction maintained by the thrombosed venous segment. By far the most satisfactory treatment is the resection of the occluded vein, which is most often exposed by a subclavicular, transpectoral incision. Relief from edema and cyanosis may occur spontaneously, but the process is unpredictable and may end up in severe neuralgia on exercise, a type of intermittent claudication.

It is doubtful whether the moderate use of alcohol and tobacco would influence this condition.

ASTHMA AND MENSTRUATION

To the Editor:—A white woman aged 36 has had allergic asthma since the onset of menstruation at the age of 12. In the beginning it would trouble her only for a few days before the menstrual period but now it is present in mild form (easily controlled by symptomatic treatment) throughout the cycle but becomes almost intractable a few days before the period and is relieved only with the onset of bleeding. She is the mother of six children, the youngest 2 years of age. Each pregnancy has resulted in complete remission of all asthmatic attacks after the first one to three months. She has had no miscarriages or abortions. General physical examination, including a check of the sinuses, a blood count, a Wassermann test and urinalysis, revealed no significant indications except for a moderately emphysematous chest. Pelvic examination was not remarkable. The sputum during attacks shows abundant eosinophils, and differential counts done at these times have shown moderate (from 6 to 10 per cent) eosinophilia. She will not submit to skin testing. The patient has arranged to make the bedroom as nearly dust free as possible and has been on elimination diets but has not been benefited. I have treated her now for one year on theophylline with ethylene diamine by mouth up to 15 grains (1 Gm.) in twenty-four hours and occasional doses of epinephrine 3 minims (0.2 cc.), which gives good symptomatic control in the intramenstrual period—much better than larger and more frequent dosage of epinephrine without theophylline with ethylene diamine or with ephedrine and phenobarital compounds had previously done. The premenstrual attacks are, however, becoming more severe. Intravenous theophylline with ethylene diamine (7½ grains [0.5 Gm.]) with 30 cc. of 50 per cent dextrose, frequent epinephrine, rare doses of morphine and sodium pentobarbital up on 3 grains (0.2 Gm.) see her through this hectic period. On several occasions she has seemed practically moribund. It has been noted by the patient that any febrile state was followed by a period of partial or complete remission of symptoms. Fearing to use any kind of fever therapy at my disposal except autogenous blood, I have on two occasions induced mild fever (102 F.) by repeated injections of her blood intramuscularly. This empirical treatment has resulted in temporary improvement. The questions I now wish to ask are: 1. What would be the result of x-ray castration? Would such a procedure be justified? 2. Have you any confidence in endocrine therapy? If so, what? (This has been suggested by a consultant.) 3. Have you any additional suggestions as to symptomatic treatment? Would you advise the trial of epinephrine in oil in place of regular 1: 1,000 epinephrine?

R. E. Shaw, M.D., Clarksville, Iowa.

ANSWER.—This query brings up two important considerations in the treatment of bronchial asthma. In the first place the phrase "she will not submit to skin testing" is unthinkable in this day and age. There has been a great improvement in the making and in the interpretation of skin tests. It is not an ordeal, as implied. The tests are painless if done cutaneously, and if carried out intracutaneously the pain is slight. No after-effects should follow skin testing but the testing should be carried out by one who has had experience and who can make all the necessary tests, both cutaneous and intracutaneous. In a patient who is only 36 the substance or substances which cause the asthmatic attacks should be discovered, especially since eosinophilia is present. The patient should be persuaded to have these tests done.

The relationship of bronchial asthma to menstruation and pregnancy has received a great deal of consideration and the consensus is that there is a definite connection. But no one has been able to prove that menstruation is the underlying cause of asthma. One must realize that menstruation is merely a predisposing factor in asthma; there is usually a hereditary factor and the attacks are precipitated by exposure to some such substance as pollen, molds, house dust, drugs or certain food. Every one agrees that many female asthmatic patients are worse just before the flow and feel better as soon as menstruation begins. Because of this, many physicians give injections or tablets of ovarian material. Injections once a week of an extract of the whole ovary are probably most commonly used, and in many cases excellent results are obtained; the amount of asthma is frequently much lessened by its use.

X-Ray castration for asthma is not warranted, especially for a patient so young. Artificial menopause is sometimes followed by intractable asthma. Epinephrine in oil intramuscularly gives longer relief than 1: 1,000 epinephrine subcutaneously.

PUSTULAR PSORIASIS OF HEEL

To the Editor:—Is there such a condition as "pustular psoriasis of the heels?" The patient has shown no other signs of psoriasis since the onset of the condition of his heels two years ago. There is hyperkeratosis with associated pustulation of the heels in which the new pustules persist for several days and then are apparently absorbed but with further resultant exfoliation of the overlying layers of the skin. Therapy has included roentgen and ultraviolet radiation and all sorts of fungicides. constitutional therapy has not been neglected. Improvement seems to proceed to a certain point and then the condition either gets worse, if neglected, or remains stationary, if treatment is continued.

M.D., Virginia.

ANSWER.—Pustular psoriasis occurs on the palms and soles and may be associated at times with ordinary psoriatic patches elsewhere on the skin. The lesions are characterized by exfoliation and insets of intra-epidermic lakes of sterile pus. It needs to be differentiated from eczematoid ringworm and acroderma-

titis perstans of Hallopeau. The relationship to so-called pustular bacterid is much debated. Some dermatologists believe that pustular psoriasis, acrodermatitis perstans and pustular bacterid are mere variants of one another clinically and histologically. In its most characteristic form, however, pustular psoriasis may be differentiated from acrodermatitis perstans of the palm by the fact that in the former the lesions originate on the thenar and hypothenar surfaces, whereas in the latter they first involve the regions about the nails. In acrodermatitis there is atrophy, even of the phalanges, while in pustular psoriasis there is none. The pustules are sterile in pustular psoriasis, while they often contain staphylococci in acrodermatitis.

In pustular bacterid, which many believe is identical with pustular psoriasis, the best therapeutic responses have followed the eradication of foci of infection. These have been found most frequently in the tonsils and teeth. Stimulating agents applied locally often are found to irritate. In pustular psoriasis also one should on general principles seek foci of infection. If any are found they should of course be eradicated. Such general measures as are applicable for other types of psoriasis may be employed, such as the administration of arsenic. Pustular psoriasis resists ordinary local therapy. A combination of chrysarobin and ultraviolet radiation has been found useful. Roentgen therapy may be helpful. These remedies should not be used too long if they are ineffective, nor should their dosage go beyond a safe limit.

CHRONIC LETHARGIC ENCEPHALITIS

To the Editor:—**A white man about 23 years of age had what he says was a mild case of scarlet fever and mumps about five years ago. Since that time he has been drowsy and lethargic, especially late in the day. He says that the condition is no worse now than it was four years ago, but he is more conscious of it and worries all the time. His wife states that he talks more slowly and does not smile as much or take an interest in his friends and surroundings. He refuses to go out with other people, as he is afraid they will notice his trouble. The only other complaint is shortness of breath. Physical examination is essentially negative. He is well developed. The tonsils are hypertrophic. The facial expression is rather blank; however, he does appreciate a good joke. The superficial reflexes are somewhat hyperactive. No pathologic reflexes are present. I have termed this encephalitis with a slight tendency toward paralysis agitans. As to treatment, I am using benzedrine sulfate. The questions in my mind are: Is the benzedrine a curative measure or does it only give symptomatic relief? In view of the fact that the patient has gone four years without getting any worse, is there any chance of complete recovery? Would hospitalization with studies of spinal fluid and x-ray examination of the skull be of any advantage? I am allowing the patient to continue his work; would bed rest be better? Is it better to use stramonium with the benzedrine?**

J. F. Hattenbach, M.D., Cleveland.

ANSWER.—Benzedrine sulfate is used for symptomatic relief only if the patient has encephalitis. The chronic lethargic encephalitis due to influenza is usually an incurable affliction. Occasionally patients are seen whose symptoms are mild and who under proper medication improve so much that it appears that the patient has made a recovery. The pathology of encephalitis due to influenza, on the one hand, is such as not to permit recovery. Encephalitis following scarlet fever and mumps, on the other hand, usually clears up completely. Spinal fluid examination should be made. It may show evidence of abnormalities in the cell count, globulin content and colloidal gold reaction. The pressure of the fluid should be determined by a manometer with testing for subarachnoid block. The patient should work if possible. It is suggested that he be given 30 drops of tincture of stramonium three times daily for one week, then 50 drops three times daily for another week and 75 drops three times daily from then on; 10 mg. of benzedrine sulfate should be given in the morning and at noon. No benzedrine should be given after 3 p. m. because of its tendency to produce insomnia.

EXOPHTHALMOS AFTER THYROIDECTOMY

To the Editor:—**Can you give me some information on the treatment of exophthalmos which follows thyroidectomy for acute exophthalmic goiter? Following the operation there was only a slight protrusion of the eyes, but approximately six months later the left eye became extremely prominent and the right eye a little more than at first. This exophthalmos is severe. The patient has a —12 basal metabolic rate. I am interested in knowing whether or not the administration of thyroid or any other therapeutic agent is of any value in this type of case or whether surgery offers the only possibility of relief.**

M.D., N. Y.

ANSWER.—Sometimes exophthalmos of the type described is relieved by the administration of iodine. This may cause the basal metabolic rate to be reduced to a lower level, with symptoms of hypothyroidism. It may therefore be necessary to give both iodine and thyroid. This is the only hope of relieving the condition medically. Surgical procedures should not be resorted to unless the exophthalmos is so pronounced that prolapse of the eyeball or corneal ulcers occur.

IMMUNITY TO TETANUS

To the Editor:—**Will you please send me any information on record as to whether or not recovery from a tetanus infection will confer permanent immunity.**

Ralph E. White, M.D., Santa Ana, Calif.

ANSWER.—The question cannot be answered until such a patient has been followed over a period of years with tests of the blood serum for amounts of tetanic antitoxin persisting. There is every reason to believe however that, if a person has once had an attack of tetanus and has recovered, response to a second infection would be more prompt and effective. The anamnestic antibody response is a well known phenomenon and has been shown to apply to reinjections of tetanus toxoid. Practically, however, if the antitoxic content of the serum is not known, prophylactic injection of tetanic antiserum is the only safe procedure in any condition in which tetanus is likely to develop.

POSSIBLE CONGENITAL SYPHILIS

To the Editor:—**A woman aged 28 was treated throughout her pregnancy intensively with neoarsphenamine and a bismuth compound. At term her Wassermann reaction was 4 plus, but she gave birth to an apparently normal child with a negative Wassermann reaction. Should this child receive antisyphilitic treatment, and if so at what age and in what amount? Another case is exactly the same except that the second child has a positive Wassermann reaction. What treatment would you advise in this case and at what age?**

M.D., New York.

ANSWER.—The information given in regard to the first baby is inadequate. If the blood serologic studies were done within eight weeks after the baby's birth, the report is not entirely reliable as to the presence of syphilis in the child. However, if subsequent serologic tests have shown the child's blood to be negative and if the baby has no clinical evidence of syphilis there is no need of treatment for syphilis. Each month after the second month of life that the serologic tests are reported negative, the greater becomes the probability that the child does not have syphilis. Accordingly, if the child is now more than 2 months old and the tests are negative there is no need of treatment for syphilis. Continued observation and reexamination for syphilis until the child is at least 2 years of age are, however, advisable.

If the time factors have been given the same consideration in the second case as in the first, the second child should be treated for syphilis immediately. If the positive test was taken when the child was more than 2 months old, treatment is indicated. If, however, the blood was taken from the umbilical cord or during the first month of life, the test is in reality a test of the mother and not the child, because the substance which produces a positive Wassermann reaction may have been carried over to the child, which would not produce syphilis. On the other hand, if Spirochaeta pallida as well as the substance x was transmitted, the child will develop syphilis. In the interpretation of the serologic tests in the newborn the time factors are most important, and they were not stated in either of these cases. If the second child has syphilis, treatment should be started immediately. The method and manner of treating a newborn child for syphilis has been outlined in a recent publication of the Cooperative Clinical Group and may be obtained from the Venereal Disease Division of the United States Public Health Service, Washington, D. C.

FLEISCHMANN'S YEAST—ALLERGENS IN RICE

To the Editor:—**In the two recipe books for allergic patients which have been published recently I find conflicting statements with regard to Fleischmann's yeast: One says that the product is made of tapioca and the other says that it is made of wheat. Each book claims to quote the makers. Can you tell me which of these is correct? Can you tell me whether wild rice contains the same allergen as polished or brown rice?**

M.D., Illinois.

ANSWER.—Both recipe books are partly correct. The label for Fleischmann's yeast states that the product is fresh yeast with cereal or tapioca flour, and it is probable that the product contains either ingredient depending on market conditions.

Wild rice is a species of rice found in Canada, in the United States and in other parts of the world. Wild rice belongs to the genus Zizania, while the common brown rice belongs to the genus Oryza. Although it is a different genus, it belongs with common or brown rice in the family of Gramineae or grasses. It is difficult to say whether it has the same allergen, but it undoubtedly behaves as do other members of the Gramineae. In other words, it is likely to have an antigen common for the Gramineae in addition to an antigen which is specific for the genus or species. Generally speaking, the relationship is close enough so that it would not be advisable to substitute one for the other in case of allergy to one of these rices.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, October 14, page 1511.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Medical centers having five or more candidates desiring to take the examination, Feb. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th Street, Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Written.* Part I. Various places throughout the United States and Canada, Feb. 15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral.* Philadelphia, Nov. 3-4. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Various sections of the United States, Feb. 19. Formal application must be received on or before Jan. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written examination and review of case histories (Part I) for Group B candidates* will be held in various cities of the United States and Canada, Jan. 6. *The final date for receipt of these applications was Oct. 4, 1939. General oral and pathologic examinations (Part II) for all candidates (Groups A and B)* will be conducted in Atlantic City, N. J., June 8-11. *Applications for admission to Group A, Part II examinations must be on file not later than March 15.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Various cities of the United States and Canada, March 9. Oral. New York, June 10. *Formal applications must be received before Jan. 1.* Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Boston, Jan. 20-21. *Applications must be filed on or before Nov. 1.* Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF PATHOLOGY: Memphis, Nov. 22-23. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: New York, April 30 and May 1. Kansas City, Mo., preceding the Region III meeting of the American American Academy of Pediatrics, Seattle, June 2. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, December. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlanta, Ga., Dec. 9-11. Sec., Dr. Byrl R. Kirklin, 102-110 Second Avenue S.W., Rochester, Minnesota.

AMERICAN BOARD OF SURGERY: Part II. Atlanta, Ga., Nov. 15. *Will include candidates living in the South only.* Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 9-11. (The only examination session to be held in 1940.) *Case reports must be submitted not later than November 9.* Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Maryland June Examination

Dr. John T. O'Mara, secretary, Board of Medical Examiners of Maryland, reports the written examination held at Baltimore, June 20-23, 1939. The examination covered nine subjects and included ninety questions. An average of 75 per cent was required to pass. One hundred and fifty-two candidates were examined, of whom 145 passed and seven failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists		(1939)	83.3
George Washington University School of Medicine		(1939)	85.2
Georgetown University School of Medicine		(1939)	90
Northwestern University Medical School		(1939)	83.3
Rush Medical College		(1937)	88.5
Louisiana State University School of Medicine		(1939)	79.2
Johns Hopkins University School of Medicine		(1935)	83,
	(1936) 89, (1937) 83, (1938) 80, 83.3, 85, (1939) 77.5, 78.3, 79.2, 80.1, 81, 81.1, 82.1, 82.2, 83, 83.2, 83.3, 84, 84, 84, 84.2, 84.2, 84.4, 85, 85, 85, 85, 85, 85.5, 86, 86.1, 86.2, 86.6, 87, 87, 87, 87, 87, 87.1, 87.2, 87.2, 87.4, 88, 88, 88.5, 90, 90.2,		
University of Maryland School of Medicine and College of Physicians and Surgeons		(1937)	81.3,
	(1938) 80, 82.2, 83.4, 84, 85.2, (1939) 78.1, 78.2, 78.3, 79.3, 79.3, 79.5, 80.2, 80.2, 80.4, 80.5, 81, 81, 81, 81.5, 82, 82, 82.2, 82.3, 82.5, 82.5, 83, 83, 83, 83.3, 83.4, 83.5, 84, 84, 84, 84, 84.2, 84.3, 84.3, 84.4, 85, 85, 85, 85, 85.2, 85.3, 85.4, 85.5, 85.6, 86, 86.1, 86.2, 86.3, 86.4, 86.5, 86.5, 86.5, 87, 87, 87, 87, 87.1, 87.1, 87.4, 88, 88, 88, 88.3, 89, 89, 89, 89.1, 89.1, 89.2, 89.5, 90.4, 90.5, 90.5, 91, 92		
Harvard Medical School		(1939)	81.3
New York University College of Medicine		(1939)	81, 86.3
Duke University School of Medicine		(1939)	79.2*
University of Oregon Medical School		(1937)	82.2
Medical College of Virginia		(1939)	85.2
Medizinische Fakultät der Universität Wien		(1912) (1928) 83.2, (1932) 78.3	78,
Hessische Ludwigs-Universität Medizinische Fakultät, Giessen		(1910)	81
Universität Heidelberg Medizinische Fakultät		(1904)	77.1

School	FAILED	Year Grad.
George Washington University School of Medicine		(1935)
Medizinische Fakultät der Universität Wien		(1913), (1930)
Christian-Albrechts-Universität Medizinische Fakultät, Kiel		(1924)
Philipps-Universität Medizinische Fakultät, Marburg		(1923)
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia		(1936)
Regia Università di Napoli Facoltà di Medicina e Chirurgia		(1933)

Twenty-four physicians were licensed by reciprocity and nine physicians were licensed by endorsement from January 26 through July 20. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists		(1918)	California
College of Physicians and Surgeons of San Francisco		(1905)	Penna.
Georgetown University School of Medicine		(1926), (1929) (1932)	Dist Colum., Minnesota, (1938) New York
Loyola University School of Medicine		(1938)	Ohio
Northwestern University Medical School		(1935)	New Jersey
Rush Medical College		(1922) Illinois, (1931)	Penna.
Johns Hopkins University School of Medicine		(1922)	New York
Tufts College Medical School		(1930)	New York
University of Michigan Medical School		(1924)	Michigan
University of Nebraska College of Medicine		(1936)	Nebraska
Cornell University Medical College		(1934)	New York
University of Oregon Medical School		(1936)	Oregon
Jefferson Medical College of Philadelphia		(1923)	Ohio
University of Pennsylvania School of Medicine		(1932)	Penna.
Medical College of the State of South Carolina		(1938)	S. Carolina
University of Vermont College of Medicine		(1935)	New York
Medical College of Virginia		(1936)	Virginia
Univ. of Virginia Department of Medicine		(1935), (1937)	Virginia
University of Manitoba Faculty of Medicine		(1926)	Louisiana

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1939, 2)	N. B. M. Ex.
George Washington University School of Medicine		(1937)	N. B. M. Ex.
Northwestern University Medical School		(1934)	N. B. M. Ex.
University of Minnesota Medical School		(1935)	N. B. M. Ex.
Cornell University Medical College		(1935)	N. B. M. Ex.
New York University, University and Bellevue Hospital Medical College		(1933)	N. B. M. Ex.
University of Pennsylvania School of Medicine		(1918)	N. B. M. Ex.
Vanderbilt University School of Medicine		(1936)	N. B. M. Ex.

* License withheld pending completion of internship.

Louisiana June Report

Dr. Roy B. Harrison, secretary, Louisiana State Board of Medical Examiners, reports the written examination held at New Orleans, June 1-3, 1939. The examination covered twelve subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and forty-three candidates were examined, all of whom passed. Seven physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Northwestern University Medical School		(1939)	85.6
School of Medicine of the Division of the Biological Sciences		(1938)*	83.1
Louisiana State University School of Medicine		(1939)†	82.2,
	82.9, 83.1, 83.6, 83.7, 83.7, 84.2, 84.2, 84.2, 84.4, 84.5, 84.7, 84.7, 84.7, 84.8, 84.9, 85, 85.1, 85.2, 85.2, 85.2, 85.4, 85.5, 85.5, 85.5, 85.5, 85.6, 85.6, 85.7, 85.8, 85.9, 85.9, 85.9, 86, 86.1, 86.1, 86.1, 86.2, 86.2, 86.3, 86.4, 86.4, 86.4, 86.6, 86.7, 86.7, 86.9, 87, 87, 87, 87.5, 87.6, 87.8, 88.1, 88.3, 88.4, 88.7		
Tulane University of Louisiana School of Medicine		(1938)	88.2,
	86.6,* (1939) 84.7,‡ (1939)§ 80.5, 80.5, 80.9, 81, 81.4, 81.4, 81.5, 81.5, 81.5, 81.8, 81.9, 82.4, 82.5, 82.5, 82.6, 82.6, 82.7, 82.7, 82.7, 83, 83.2, 83.5, 83.7, 83.7, 83.8, 83.8, 83.8, 83.8, 83.9, 83.9, 83.9, 83.9, 84, 84, 84.1, 84.1, 84.1, 84.2, 84.3, 84.3, 84.3, 84.4, 84.4, 84.4, 84.4, 84.5, 84.5, 84.7, 84.8, 84.8, 84.9, 85, 85, 85.1, 85.2, 85.2, 85.2, 85.5, 85.5, 85.6, 85.9, 86, 86, 86.1, 86.3, 86.4, 86.4, 86.5, 86.5, 86.7, 86.9, 87, 87.1, 87.1, 87.3, 87.8, 87.8, 88.4		
Johns Hopkins University School of Medicine		(1923)	84.3
Tufts College Medical School		(1936)	83.8
Creighton University School of Medicine		(1938)	80.8

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1935)	Arkansas
University of Pennsylvania School of Medicine		(1925)	Mississippi
University of Pittsburgh School of Medicine		(1924)	Penna.
University of Tennessee College of Medicine		(1936), (1937)	Tennessee
Baylor University College of Medicine		(1930), (1933)	Texas

* License withheld pending completion of internship.

† These applicants have received the M.B. degree and will receive the M.D. degree on completion of internship. Licenses have not been issued.

‡ License withheld pending completion of internship and United States citizenship.

§ Licenses withheld pending completion of internship.

Book Notices

New and Nonofficial Remedies, 1939. Containing Descriptions of the Articles Which Stand Accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1939. Cloth. Price, $1.50. Pp. 617. Chicago: American Medical Association, 1939.

New and Nonofficial Remedies is of interest and value to many classes of persons who are concerned with the use of medicinal preparations—physicians, pharmaceutic manufacturers, chemists, pharmacologists, government officials, teachers, medical students and ultimately the lay consumer, in whose interest that of all must be judged.

To the physician the book is a reliable source of therapeutic and posologic information on the newer materia medica. To the pharmaceutic manufacturer it represents a record of the best achievement in his field and a goal toward which he may bend his efforts in improving his own ends. To the chemist it is a book of standards. To the pharmacologist it represents a compendium of knowledge of the newer drugs. To the government official it represents a book of standards for preparations which have not become official and a yardstick on permissible therapeutic claims made for new products of proved or promised therapeutic value. To the teacher it is such a text on progressive modern materia medica as is nowhere else available. To the medical student it is a valuable source of training in rational therapeutics, a vade mecum for his subsequent professional career. To the lay consumer it is a valuable protection that operates indirectly through his physician. Criticisms of the form and manner of presentation of data in this book have been made with justification from the points of view of the various classes enumerated. The fact remains, however, that each can find in it what he looks for if he will take the trouble to use the paraphernalia provided.

New and Nonofficial Remedies 1939 conforms to the general pattern of the thirty-two annual volumes which have preceded it. Some new drugs have been added, a great many new dosage forms of already accepted drugs have been added, some drugs have been omitted either for conflict with the rules or because they have been taken off the market. Most noteworthy among the newly accepted drugs are the crystallized estrogenic preparations Estrone (theelin) and Estriol (theelol). In line also with the modern trend toward the use of crystalline principles instead of extractive preparations are the new crystalline vitamin principles Thiamin Chloride (crystalline vitamin B_1 hydrochloride), Nicotinic Acid (vitamin B_2) and Nicotinic Acid Amide. Other newly included drugs are Benzedrine Sulfate, Prostigmine (as the bromide and methylsulfate) and Immune Globulin (Human).

Noteworthy omissions are those of serobacterins, because of failure to live up to their promise of therapeutic value, and "Suppositories Salyrgan", found to be the cause of undesirable irritation.

The chapter formerly called Organs of Animals has been dispersed and the various endocrine preparations formerly included in this chapter appear alphabetically under their individual names: Ovary, Pancreas, Parathyroid, Pituitary and Thyroid. Drastic revision of the monograph Ovary was made necessary by the addition of new crystalline principles.

The chapter Vitamins and Vitamin Preparations has been revised to use the newer chemical nomenclature to present the "Allowable Claims" up to date. Other revisions are found in the articles Anesthetics Local, Bismuth Compounds and Fibrin Ferments and Thromboplastic Substances.

Dissociation of Tubercle Bacilli: Investigations on the Mammalian Types Including BCG. By J. Frimodt-Möller. Acta tuberculosea Scandinavica, Supplementum II. Paper. Pp. 256, with 49 illustrations. Copenhagen: Einar Munksgaard, 1939.

This extensive monograph in English on the dissociation of tubercle bacilli, presented to the University of Copenhagen in fulfilment of the requirements for the degree of doctor of medicine, also appears in the *Acta tuberculosea Scandinavica*. It is a laudable volume from the standpoint of reviewing ably a subject which has been controversial from its explosive inception about a decade ago. The author reports on part of extensive investigations (reported in 1932 and 1935) carried out in the tuberculosis department of the State Serum Institute at Copenhagen on matters relating to the types of tubercle bacilli. The purpose at hand was to study the variations of bovine and human strains isolated from tuberculous material from human beings and cultivated on artificial nutrient mediums and to examine any possible changes of their virulence. It was beyond the scope of the work to describe strains which displayed variations solely as a result of animal passages. These investigations having proved to be closely related to studies on variations in the growth of tubercle bacilli carried out by other workers, it was natural to include tests of their results and methods and to supplement them with dissociation experiments on the BCG strain. A possible justified criticism might be offered that this is not an original investigation but a repetition or verification study in which no newly devised methods are used with a view to advancing the horizon of knowledge on this subject. Thus also the conclusions give little new information for so extensively recorded an investigation. However, many will welcome this book for its rounded presentation of the previous investigations on dissociation (chapter II) and further attempts to dissociate BCG (chapter III). Besides dissociation, generally understood to mean variation in the structure of bacterial colonies, which variation may be associated with a change in virulence (a term first employed by Petroff in 1927), the author utilizes the Royal British Commission on Tuberculosis terminology of 1907 in which a convenient term for the greater or lesser facility with which a tubercle bacillus grows on artificial nutrient mediums was introduced, the words dysgonic and eugonic meaning respectively a sparse and a vigorous growth.

The chief impression gained by the author when looking back on the investigations reviewed is the great multiplicity of observations, which however in only few cases will bear close examination. Thus it seems justifiable to report a series of experiments in which it has been possible, according to the author, with a simple technic to reproduce dissociations with strains of both human and bovine types. In addition, experiments on the dissociation of the BCG strain are included. Chapters VI to XII are taken up with a consideration of the author's investigations, and an appraisal and summary are included in chapters XIII and XV, with an appendix of experimental records. The points made in the summary are that pure cultures of both the dysgonic and the eugonic colonies of human tubercle bacilli could be preserved for an unlimited period through any number of transplantations or animal passages, and the two variants had the same virulence for guinea pigs and rabbits as the standard human type, with no mutual differences. The bovine dissociants were in many cases mutually different in their growth, the dysgonic colonies being smooth, dome shaped and bright and the eugonic colonies irregular, finely wrinkled and dry. Rough eugonic Petroff medium colonies contained fewer viable bacilli than dysgonic colonies, a fact which must be considered when appraising virulence. An acid Löwenstein medium stimulates the formation of eugonic secondary colonies (R forms), as stated by previous investigators. The factor inciting this was not determined. It cannot be said that it is merely caused by adaptation to glycerin or by increased resistance acquired through lysis. The dissociations always took place in the direction from dysgonic to eugonic forms (S, smooth, to R, rough). The bearing of dissociation on the relationship between the human and the bovine type is debated, but so far no transformation in vitro of a bovine to a human type has been demonstrated. Repetition of Petroff's experiment on forced dissociation of BCG by means of cultivation on Sauton with rabbit immune serum proved to be negative, no change being found in the mode of growth or the virulence of the BCG strain. Reservation is being taken in respect to Petroff's claim of having demonstrated virulent forms of BCG cultures; nevertheless, though practically minimal, the possibility is entertained theoretically since BCG-like variants were found to arise from typical dysgonic bovine strains, and avirulent eugonic variants actually regained their virulence by animal passages. The dissociation of H 37 was substantiated, however, only on the assumption that H 37 was originally bovine and not of human type (which is contrary to all the published data on H 37).

The monograph is well worth reading, especially for its rounding out of a subject which still requires further solution and possibly to be attacked by more exacting and conclusive methods. It may possibly resolve itself when dissociation as a

whole is more fully understood. This has happened before in tuberculosis with the acquisition of additional knowledge, after which a few well planned experiments have been able to settle a problem. However, since the specialist and investigator must be aware of the problems involved in the present interpretation of tuberculosis, this volume should be accepted heartily by those wishing to be conversant with the subject of the dissociation of tubercle bacilli and how this affects the status of BCG today. It is presented in good form and in a clear, well written English. The cost is nominal.

Medical Jurisprudence and Toxicology. By William D. McNally, A.B., M.D., Assistant Professor of Medicine and Lecturer in Toxicology, Rush Medical College, University of Chicago, Chicago. Cloth. Price, $3.75. Pp. 386, with 23 illustrations. Philadelphia & London: W. B. Saunders Company, 1939.

The purpose of this book, as stated in the preface, is to provide medical, pharmaceutic and dental students with a textbook covering the essentials of toxicology and also to furnish physicians with information concerning medicolegal testimony. Seven eighths of the book is composed of material on poisoning, blood, semen and hairs, all of which has been abridged from the author's larger work on toxicology published in 1937; 263 pages of this section is devoted to a discussion of poisoning in its various forms: homicidal, suicidal, accidental and industrial. Major emphasis is placed on clinical aspects such as methods of diagnosis and adequate treatment of various poisonings. One eighth of the book represents newly written chapters on courts, sudden or violent death, firearms identification and insanity. The treatment of these phases is rather superficial.

Although modestly concealed by the author, drama stalks throughout the pages of the book. Drawing on his wide court experience as expert toxicologist in *causes célèbres* of the past quarter century, the author regales his reader with accounts of mass murder by arsenic for the purpose of collecting insurance (p. 169), the application of geometry as well as chemistry in exposing a "framed" cyanide murder (Orpet case, p. 267), the attempted murder of an archbishop, his friends and associates by putting poison in the soup served at a banquet in the prelate's honor (p. 171), and even the detection of hydrocyanic acid in the blood of one of the victims of the Cleveland Clinic disaster (p. 266).

Apparently the process of condensing from the older and more voluminous text was conducted largely by the "scissors and paste-pot" method. Paragraphs and pages were lifted from the older book with the result that in this volume transitions are oftentimes abrupt, owing to the elimination of intervening material. Unfortunately this material was largely copied verbatim, including mistakes and typographic errors, so that a student who attempts to follow up the author's references will be required to do some careful detective work. The literature of toxicology has become so extensive that it is impossible to cover the entire field in any moderate sized volume. For this reason the author may be pardoned for the many omissions. While this book is a fairly satisfactory elementary textbook, it is unfortunate that the author and publisher did not use greater care in providing a more accurate and reliable work for student and reference use.

Traité d'ophtalmologie. Publié sous les auspices de la Société française d'ophtalmologie. Par MM. P. Bailliart, Ch. Coutela, E. Redslob, E. Velter. René Onfray: Secrétaire général. Tome II: Physiologie, techniques d'examen. Par MM. P. Bailliart et al. Cloth. Pp. 1,144, with illustrations. Paris: Masson & Cie, 1939.

This is the second volume of the new eight volume encyclopedia of ophthalmology that is being produced under the auspices of the French Society of Ophthalmology. It is divided into two parts, physiology and technic, with the following subdivisions: the protective apparatus of the eye, by Magitot and Rossano of Paris; sensibility of the eyeball, by Cerise and Thurel of Paris; nutrition and circulation of the eye, by Bailliart of Paris; conjunctival circulation, by Rollin of Paris; endocular fluids and nutrition, by Magitot of Paris; ocular tension by Magitot; physiology of extrinsic ocular motility, by Nordman of Strasbourg; intrinsic musculature, by Magitot; theoretical and applied optics, by Haas of Paris; physiologic optics, by Joseph of Paris; biologic optics, by Leplat of Liége; entopic phenomena by Viallefont of Montpellier; changes in the retina under the influence of light, by Magitot; physiology of vision, by Piéron of the Collège de France, and binocular and spatial vision, by Opin of Toulon. The chapters on the technic of examination are shorter and divided in the following manner: methods of examination of the living eye, by Lemoine and Valois of Never; optotypes, by Lemoine and Valois; trial cases, by Joseph of Paris; instruments for the measurement of refraction, by Haas of Paris; skiascopy, by Joseph of Paris; perimetry, by Dubois-Poulsen of Paris; tonometry, by Dubar of Paris; ophthalmodynamometry, by Rollin of Paris; methods of photography of the eye, by Mawas of Paris; radioscopy and radiography, by Hartmann of Paris; methods of localization of intra-ocular foreign bodies, by Dollfus of Paris, and electromagnets and sideroscopes, by Veil of Paris. The chapters are not of as uniform caliber as are those of the first volume. Some, particularly those of Magitot and Bailliart, are brilliant but tend slightly toward the expression of personal opinion, whereas others are somewhat skimpy, especially the one on biomicroscopy. Isn't it interesting to see that term, coined by our own Edward Jackson, coming into such universal use? Striking is the lack of chauvinistic attitude throughout the chapters, for the bibliographies are international in character and full credit is given, regardless of differences in international politics. This is refreshing in contrast to the regimentative attitude that prevails elsewhere on the continent. The mechanical aspect of the volume is good and the majority of the illustrations are excellent. Particularly good are some of the color plates. After the second volume has been digested, the feeling still remains that this is a "must have" work.

A Textbook of Obstetrics with Special Reference to Nursing Care. By Charles B. Reed, M.D., F.A.C.S., Associate Professor of Obstetrics, Northwestern University Medical School, Chicago, and Bess I. Cooley, R.N., Supervisor and Instructor, Department of Obstetrics, Wesley Memorial Hospital, Chicago. Cloth. Price, $3. Pp. 476, with 209 illustrations. St. Louis: C. V. Mosby Company, 1939.

The authors are a physician of many years' experience and a competent supervisor of nurses at an excellent hospital. There has been a tendency for textbooks on nursing gradually to broaden their subject matter until the content pertains more to the practice of medicine than to that of nursing. This book goes further in that direction than most. It contains several excellent chapters, particularly on anatomy and physiology. There is a good chapter on anesthesia and analgesia, and a good chapter on normal labor.

The arrangement is not always orderly; for example, the chapter on antepartum care digresses to give a description of aseptic technic to be observed during the birth of the child. This is undesirable and entirely out of place. There are a number of statistical facts, for example those of multiple pregnancy and those on intra-uterine mensuration of the fetus, which contain facts and formulas that could not be of value to the nurse. A paragraph concerning the thyroid gland states that, "in one series, 60 per cent of pregnant women were aborted because of glandular hypertrophy." No reference is given nor are there any references in the book. This statement on the thyroid gland would tend to give the student nurse an entirely erroneous conception concerning thyroid disease complicating pregnancy.

The chapter on toxemias might lead the nurse to infer that certain methods of treatment are mandatory rather than methods available to the physician. There is a statement about eclampsia but no discussion of preeclamptic toxemia. The chapter is poorly arranged. There is also the following statement concerning the treatment of eclampsia, which is not subscribed to by most obstetricians at the present time: "If the woman is in labor, the process should be hurried as much as possible by forceps or by version and extraction. If not in labor, the uterine activity can be induced by the bag, bougie, or possibly in an emergency by cesarean section under gas anesthesia."

In one chapter there is given a list of eight types of pain in ectopic pregnancy which, it is said, the nurse should know about. This might be confusing even to the trained obstetrician. Two of these types of pain could be elicited only by pelvic examination.

The authors write easily about the signs of vitamin E deficiency and the value of vitamin E for bleeding during pregnancy. While vitamin E appears to be of value in the prevention of spontaneous abortion, its description in this connection would be confusing to the student nurse.

The book contains descriptions of several methods which appear to be entirely obsolete and some of which are considered to be dangerous; for example, resuscitation of the asphyxiated baby by means of Byrd's method of manipulation.

In connection with the advice concerning intravenous transfusion, a description of the technic for cutting down on, and ligation of, the vein is given. This is a procedure which is almost obsolete, and yet there is nothing in the description to indicate that this is so. A description of the Walcher position is interposed between paragraphs on curettage for incomplete abortion and paragraphs on artificial interruption of pregnancy. A statement is made concerning artificial rupture of the membranes at term for placenta praevia centralis. Surely the authors must have had in mind placenta praevia partialis or marginalis. There is a description of the induction of labor by four doses of from 5 to 10 grains of quinine sulfate. It is suggested that the patients may be given a drachm of 1 : 80 dilution of chemically pure sulfuric acid in a glass of water for each 5 grains of quinine. Treatment which is rarely employed is out of place in a book on obstetrics for nurses. A description is given of the use of laminaria tents for the interruption of pregnancy. This method of induction of labor is not surely aseptic and there is no reason to include this in a textbook on obstetrics or on nursing. There are a number of excellent outlines for the setup of the operating rooms for various obstetric procedures which should be of considerable value to the graduate nurse, and particularly to one who is instructing nurses in obstetric procedures.

This book would have been of greater value if it had been published in condensed form as a handbook of the nursing technic of obstetric procedures.

Psychischer Befund und psychiatrische Diagnose. Von Professor Kurt Schneider, Direktor des Klinischen Instituts der Deutschen Forschungsanstalt für Psychiatrie (Kaiser Wilhelm-Institut) in München. Paper. Price, 1.40 marks. Pp. 27. Leipzig: Georg Thieme, 1939.

This is devoted to a discussion of symptoms and their evaluation in psychiatric diagnosis. It is intended primarily for practitioners. The subject is introduced with a suggestion that disturbances in the individual functions be sought for and interpreted and, from these symptoms, a diagnosis be built. The more frequent psychoses, schizophrenia and cyclothymia, and the demarcation of these psychoses from neuroses, psychopathic personality and toxic and organic cerebral conditions are stressed. Disorders of perception, of thought and mood and of will and instincts are considered. Symptoms are then grouped into those which are significant for a diagnosis of schizophrenia and those which are more general and can be utilized as diagnostic aids only against the background of the total clinical picture. Interspersed are warnings against pitfalls in the interpretation of symptoms and cautions as to common sources of errors. This all too brief monograph is a concentrate of an extensive psychiatric experience. A study of its pages will reward the prepared reader, yet one questions its usefulness for the general practitioner. The average physician, allergic to psychiatric phraseology, may find this condensed presentation, the delicate distinctions of ideas and categories and the terminology too formidable for ready usage.

Lungenabszess und Lungenabszedierungen im Kindesalter. Von Dr. med. Sotirios Roufogalis. Mit einem Geleitwort von Prof. Dr. med. F. Goebel, Direktor der Kinderklinik der Medizin. Akademie, Düsseldorf. Paper. Price, 16.50 marks. Pp. 166, with 37 illustrations. Leipzig: Johann Ambrosius Barth, 1939.

Pulmonary abscess in the opinion of Professor Goebel, who writes the introduction, has received little attention in the pediatric literature (German), which he notes is in marked contrast to the extensive consideration given the subject in the literature of surgery and internal medicine, and this literature is concerned largely with the disease as seen in the adult. The generally accepted causes of pulmonary abscess are considered impartially; in fact all through the monograph the author presents data and elaborates their bearings on the problems, with no attempt at empasizing his own point of view, which is that of a pediatrician. Tonsillectomy is noted as a rather frequent cause of pulmonary abscess, though at one time it was thought to be a rare or, in Germany, a nonexistent etiologic factor in this disease. Diagnosis is chiefly by the x-rays, though the physical signs are clearly and carefully stated. In treatment the author is conservative as to radical operation. He states that, whereas formerly preference was given to surgical intervention, today operation is seldom advised unless empyema is present. (The monograph concerns children only.) Though strongly conservative on the question of surgical intervention, the author feels that there are cases in which external operation should not be postponed, especially in older children. He regards it as extremely difficult to lay down rules as to the time to operate as well as to determine the right time in any particular case. In most cases the best results have come from general treatment by the pediatrician. He speaks well of bronchoscopic aspiration, but he has had limited opportunity for observing its effect in his own cases. The younger the child the worse the prognosis of pulmonary abscess, according to his experience. The illustrations are all reproductions of roentgenograms; they are well chosen and show clearly what they are intended to show. The statements are well documented by references and case reports. The general excellence of the book and the wealth of detail would justify a good index for ready reference. In common with similar monographs, this one has only a table of contents.

The Licensing of Professions in West Virginia. By Frances Priscilla De Lancy, Instructor in Political Science, West Virginia University, Morgantown, West Virginia. A Dissertation Submitted in Partial Fulfilment of the Requirements for the Degree of Doctor of Philosophy in the Graduate School of Arts and Sciences of Duke University. Cloth. Price, $2.25. Pp. 197. Chicago, Illinois: Foundation Press, Inc., 1938.

Much has been said concerning the defects of our various systems of professional licensure, but little has been written about the fundamental principles or social theories on which such regulation must rest. In her doctoral thesis Miss De Lancy has analyzed the professional laws of West Virginia and summarized their history. For the purpose of her study she has formulated a definition of the term profession both interesting and unique, namely "that organized vocation in which individuals are licensed by the state after a period of formal academic education and training in an approved professional school." So restricted, the term excludes such long recognized professions as the ministry, journalism, teaching and the stage because they are not licensed by the state. It also ignores such newer aspirants to professional recognition as plumbers, realtors and barbers on the ground that for them no formal education is deemed necessary. In her discussion of the administration of licenses the author has shown unusual discrimination in the appraisal of the functions of professional associations. Unfortunately it is erroneously stated that Negro physicians are not admitted to membership in the American Medical Association. Altogether the book is stimulating and informative. An excellent bibliography enhances its value.

Schilddrüse, Jod und Kropf: Klinische und experimentelle Untersuchungen. Von Max Saegesser. Helvetica medica acta, Supplementum IV, 1939. Paper. Price, 10 Swiss francs. Pp. 163, with 20 illustrations. Basel: Benno Schwabe & Co., 1939.

According to the conclusion on page 162, the purpose of this book is goiter prophylaxis. With two exceptions (and two translations) only German literature is quoted. On page 94 the analyses on one sample of blood are given, in micrograms per hundred cubic centimeters (γ%), as from 8.2 to 69.2. With 750 per cent error it is rather difficult to understand how small differences in the results of iodine analysis can be used for theoretical work. Furthermore, there is a peculiar method of using the analyses. The micrograms per hundred grams (γ%) in thyroid, heart, lung, liver, kidney, muscle, brain, spleen and skin of a rat are added together and the total is found to be from 1,677 to 8,894 micrograms in the different experiments, and yet in one case the thyroid is said to contain only 721 micrograms. Just what these figures mean it is impossible from reading the entire book to determine, since the weight of no organs is given, and yet on the basis of these experiments the exact rates of iodine anabolism and catabolism are estimated. The alcohol-insoluble iodine in the blood is stated to be almost entirely in the corpuscles and it is concluded that this iodine in the corpuscles is what passes out in the urine, although in another place it is stated that the process of iodine catabolism has to be gone through with in order to make this iodine alcohol soluble. On page 101 it is stated that simply raying the skin with ultraviolet causes an increase in the iodine content of the

rat and that the additional iodine must have been absorbed through the skin and lungs (presumably from ordinary air), but the values which von Fellenberg has given for the iodine content of air would make the increases noted impossible during the time of the experiment; i. e. the rate increased from 4,718-4,767 to 8,774-8,894 micrograms in four days. Wheat grains were raised in one hour of ultraviolet irradiation from 7 to 16 micrograms, and the author says this is in harmony with von Fellenberg's observation that the flora has more iodine in the summer! On page 145 are given data on five cretins in whom thyroids had been implanted. To use this procedure seems a pity, since it is well known that thyroid administered by mouth or subcutaneously can be very much better controlled than thyroid grafts, which will not grow.

Symptoms and Signs in Clinical Medicine: An Introduction to Medical Diagnosis. By E. Noble Chamberlain, M.D., M.Sc., F.R.C.P., Physician to Out-Patients, Royal Liverpool United Hospital, Royal Infirmary Branch, Liverpool. With a chapter on The Examination of Sick Children. By Norman B. Capon, M.D., F.R.C.P., Lecturer in Diseases of Children, University of Liverpool, Liverpool. Second edition. Cloth. Price, $8. Pp. 435, with 318 illustrations. Baltimore: William Wood & Company, 1938.

This edition is essentially the same as the first, and it must be remembered that physical diagnosis is a static rather than a dynamic science. There is, however, a change which adds to the satisfactory arrangement of the book, namely the collection into two chapters of all the laboratory data which had been scattered throughout the volume. There has also been added a table of biochemical standards. The book consists of thirteen chapters. The first two are more or less general and include the history taking, the physical examination and the external characteristics of disease. The next seven are devoted to important body systems, with two chapters on the nervous system. Succeeding these is a chapter on fever, another on examination of sick children and the two on laboratory data. As far as physical diagnosis is concerned, the chief objection to the book is the slight space devoted to important procedures in physical examination. Thus, percussion of the lungs is dealt with in what is equivalent to about two pages when four illustrations are deleted; incidentally, two of these, figures 77 and 78, are excellent, whereas figures 79 and 80 seem to be redundant. About the same amount of space is devoted to percussion of the heart. Auscultation is likewise dealt with rather briefly, as are other methods of physical examination which require the use of the four senses. To one of the senses is allowed a considerable amount of space; not only are a good many words written about the division of physical diagnosis which has to do with inspection, but also there are innumerable and excellent illustrations to explain the written contents. In addition to many photographs there are several colored plates and a few diagrams. The book can be recommended for the beginner in medicine. It is reasonably complete and deals largely with elementary essentials in the diagnosis of disease.

Über die integrative Natur der normalen Harnbildung. Von Gösta Ekehorn. D: R med. Teile I, II und III. Paper. Pp. 616; 619-1137; 1139-1431. Helsingfors: Mercators Tryckeri, 1938.

This wordy treatise is written by a native of Sweden in German and published in Finland; the first sentence of the preface states that it is a continuation of the author's previous book "Principles of Renal Function," which was published in English. The author first assumes that the glomerular filtrate is an ultrafiltrate of the blood and that the kidney tubules are impermeable to creatinine and only slightly permeable to urea. He calls them "schlackenstoff" to distinguish them from "schwellenstoffe," or threshold substances, including salts and water. Later, however, he spends much space disproving the impermeability of the tubule for creatinine. He states that the glomerular capillary blood pressure may be so high as to equal half the normal systolic arterial pressure, and therefore the glomerular filtrate volume averages about one fourth the renal blood volume. On the assumption of impermeability to creatinine, he quotes tables from Rehberg's 1926 publication to show the amount of ultrafiltrate and the amount of absorption of salt, water and urea back into the blood. The author states that when the reabsorption of water decreases during diuresis the reabsorption of urea decreases and that therefore there is more water and urea in the urine. The glomerular filtrate, he says, is about 125 times the volume of the urine. Therefore 124 volumes are reabsorbed. He accepts the opinion that the increase in the nonfiltrable constituent of the blood as it passes through the glomeruli controls the amount of reabsorption of salt in the convoluted tubules of the first order. The book might be said to end with the pointing out of many unsolved problems in kidney physiology and of analogies between these problems and problems connected with the secretion of gastric juice.

Nursing Mental Diseases. By Harriet Bailey, R.N. Fourth edition. Fabrikoid. Price, $2.50. Pp. 264. New York: Macmillan Company, 1939.

This is a concise, practical, informative and interesting textbook for the instruction of nurses in the understanding and management of psychiatric patients. The early chapters deal with the history of the care of the mentally sick and with legal aspects of mental disorders, followed by a general discussion of personality development, causes and classification of mental disorders, symptoms and special nursing measures required in the care of psychotic patients. Especially commendable is the chapter detailing such nursing procedures as the administration of food, relief of insomnia, prevention and treatment of bed sores, attention to evacuation of the bowels and bladder, the management of excited patients and precautions against suicide, which are so important and sometimes so difficult in the care of the mentally ill. Chapters VIII to XXI describe specific mental disorders and, in brief, the special nursing procedures requisite to each. Later chapters deal with methods of treatment such as occupational, recreational and physical therapy, which in hospitals are usually under the supervision of specially trained workers but which the nurse may be called on, especially in private practice, to direct. In conclusion there is a valuable discussion of measures for the prevention of mental illness and the promotion of mental health, and finally an excellent bibliography of suggested supplementary reading, including not only didactic but also popular writings on the subject of mental illness such, for example, as Shakespeare's King Lear and Timon of Athens.

Ker's Manual of Fevers. Revised by Frank L. Ker, B.A., M.B., Ch.B., Senior Assistant and Deputy Medical Superintendent, Little Bromwich Hospital, Birmingham, England. Fourth edition. Cloth. Price, $4.50. Pp. 354, with 15 illustrations. New York & London: Oxford University Press, 1939.

In the preface of this edition the son of the original author has expressed his desire to adhere to the aims of his father. As a consequence revisions in the text consist chiefly of slight changes or additions made necessary because of advanced knowledge, particularly with respect to treatment, including chemotherapy. To any one familiar with the subjects discussed, the contents of the book should be refreshing. It is readily apparent that the clear and complete descriptions of the various contagious diseases as presented by Claude B. Ker are the result of keen observation, careful thought and extensive experience. There are few technicalities but much information that is sound and practical. The volume is likely to receive its greatest appreciation from those who have had training in contagious disease hospitals. To the medical student the chapters on smallpox and typhoid should be of special interest. The six plates, though not in color, are all good, particularly the ones illustrative of smallpox. A table of infectious diseases at the close of the volume will be valued by the student.

Bericht über den VIII. Internationalen Kongress für Unfallmedizin und Berufskrankheiten Frankfurt a. M. 26. bis 30. September 1938. Unter der Schirmherrschaft des Herrn Reichsarbeitsministers Franz Seldte. Bänden I und II. Paper. Price, 50 marks per set. Pp. 322; 325-1252, with 145 illustrations. Leipzig: Georg Thieme, 1939.

This report contains the proceedings and papers of the eighth International Congress for Industrial Medicine and Occupational Diseases, held in Frankfort on the Main in 1938. The large number of papers presented by European workers affords the American reader an excellent opportunity to gain insight into their practices and experiences. Although most of the papers are in German, French or Italian, many of the longer ones are provided with excellent English summaries. Volume I contains a joint discussion, by the two sections of the congress, of predisposition and wear and tear in their relation to industrial

accidents and occupational diseases. Such subjects as the relation of the condition of the body to the effect of injuries, cutaneous conditions as a factor in occupational injuries and neurologic and genetic aspects indicate the extent to which this topic is discussed. In one paper special attention is given to the problem in the so-called mass production industries. Volume II, the larger of the volumes, contains the papers of the section on industrial surgery and those of the section on occupational diseases. The industrial surgeons confined their discussions to two topics: (1) injury to the peripheral nerves with the exception of the sympathetic system and (2) injuries to the foot. The cause, nature and modes of treatment of these injuries are discussed thoroughly and at length by many world authorities. The section on occupational diseases provides papers on scores of topics, including hydrocarbon solvents, manganese pneumonia, occupational cancer, silicosis, asbestosis, carbon bisulfide and chlorinated hydrocarbons, chiefly trichlorethylene. It appears from the proceedings of this international body that the problems relative to occupational diseases are at this time essentially the same for all the industrial countries of the world.

Gynaecology. By Herbert H. Schlink, Lecturer and Examiner in Gynaecology, University of Sydney, Sydney. Cloth. Price, 32s. 6d. Pp. 557, with 181 illustrations. Sydney & London: Angus & Robertson, Limited, 1939.

This was designed as a textbook for students at the University of Sydney and as such is an admirably prepared volume. Particularly well done are the chapters on anatomy and physiology and the chapters dealing with prolapse and displacement of the female generative organs. The chapters on history taking and methods of examination are at the end of the book, subjects which it appears should be taken up at the outset in a study of any specialty. The chapters on operative gynecology, postoperative complications and treatment and the descriptions and designations accompanying the illustrations are incomplete and even confusing at times, while the author is much too dogmatic in expressions relative to the choice of operation, particularly with regard to the treatment of retroversion by round ligament shortening. This may, as stated previously, be an excellent textbook for use by Schlink's students at Sydney. In view of the already published and most excellent textbooks of gynecology available, this book adds nothing of value for the American practitioner or student.

Problems in Prison Psychiatry. By J. G. Wilson, M.D., Director, Division of Hospitals and Mental Hygiene, Department of Welfare of the State of Kentucky, and M. J. Pescor, M.D., Clinical Director, United States Public Health Service Hospital, Fort Worth, Texas. Cloth. Price, $3. Pp. 275. Caldwell, Idaho: Caxton Printers, Ltd., 1939.

This is an extremely interesting pioneer work directed toward understanding the mental problems of criminals. The authors have worked with many prisoners and attempt an understanding of the cause, therapy and prevention of neurotic and psychiatric crimes. The work should be studied by prison administrators as well as physicians having to do with prisons. It is a sound psychiatric study and is the best of its kind so far attempted.

Radiologie clinique du cœur et des gros vaisseaux. Par Ch. Laubry, P. Cottenot, D. Routier et R. Heim de Balsac. Fascicules I et II. Cloth. Price, 430 francs. Pp. 163; 164-340, with 1,049 illustrations. Paris: Masson & Cie, 1939.

There are three parts to the monograph. The first is concerned with the utility of x-ray examination of the cardiovascular system and the various technics by which this method may be applied to such examination. The second part is concerned with the appearance of the normal heart in all its variations and the factors at work in the production of such normal differences. The third part is concerned with organic heart disease and considers rheumatic, congenital, syphilitic, chronic myocarditic, hypertensive and pulmonary heart disease in the order named. Then the pericardial involvements and the picture produced by heart failure follows. The appearance produced by extracardiac mediastinal masses is finally considered. The bibliography is extensive. This two volume work on cardiovascular roentgenology is highly recommended. It is beautifully and completely illustrated and the terse discussion is quite adequate. The x-ray delineation of the right and left sides of the heart separately in the cadaver by means of barium sulfate injections is illuminating.

Regeneration: Ihre Anwendung in der Chirurgie. Mit Einem Anhang: Operationslehre. Von Dr. Johann v. Ertl. Paper. Price, 24 marks. Pp. 246, with 388 illustrations. Leipzig: Johann Ambrosius Barth, 1939.

This book reports the principles used and the results obtained in the care of about 60,000 patients with war injuries. It is purposely written twenty years later in order to give the late results. It is a general treatise on the theory behind the work done rather than a statistical survey. The late results are shown by numerous reproductions of photographs and x-ray plates. There is a short incomplete historical sketch, followed by a general discussion of the regeneration and transplantation of the various tissues, but little of which is the author's original work. The principle of repair of tissue defects in layers is stressed repeatedly, as are the biologic conditions of successful transplantation of tissues in general. These are well accepted concepts. The author makes frequent use of thin flexible bone grafts, so-called osteogenic grafts, and reports excellent results. A small number of small bone chips are removed attached to the periosteum in preparing this type of graft. It is used as an onlay graft or doubled back on itself in replacing bone defects, as in the lower jaw. The book could be more detailed in describing technical procedures. The illustrations and sketches cannot be compared as to quality with those of older German writings.

The Mechanism of Thought, Imagery and Hallucination. By Joshua Rosett, Professor of Neurology in Columbia University, New York. Cloth. Price, $3. Pp. 289, with 12 illustrations. New York, Morningside Heights: Columbia University Press, 1939.

A tremendous amount of effort has been put into this great tome in an effort to explain the mechanisms of mental processes on a strictly organic basis. Biologic data and the experiments with diseases affecting man are utilized in deducing the mechanisms of thought. Each chapter outlines a phase of the subject and is followed by a detailed summary and bibliography. Thought, imagery and hallucination are discussed and described, but the explanations are not satisfactory even though based on physiology. We still appreciate Sherrington's statement that understanding the physiology of the brain leads us but little closer to understanding mental processes.

Troubles du myocarde dans les anémies: Etude clinique, expérimentale et pathogénique de l'insuffisance nutritive d'origine sanguine. Par le Docteur Charles Baugé. Paper. Pp. 124, with 9 illustrations. Paris: Librairie E. Le François, 1939.

This monograph, based on analysis of six case reports and seventeen animal experiments correlated with a thorough review of the literature, deals with the effect of acute hemorrhagic anemia and chronic progressive anemia on the heart. The author properly points out that the effect of anemia on the heart constitutes an important part of the clinical picture. As a result of his analyses the author states that gallop rhythm, an increase in the magnitude of the heart activity fluoroscopically, the presence of heart murmurs and low voltage and low T waves constitute the elements in chronic anemia. Occasionally, coronary electrocardiographic changes are present. This is more prevalent in the acute form. The circulatory changes are due as much to the changes in circulatory blood volume and composition of the plasma in the acute form as to the loss of hemoglobin. Transfusion is considered the most important method of treatment. The monograph will repay the cardiologist for perusing it. Perhaps the assembly of data dealing with this subject will inspire further investigation of this all important subject.

How to Psychoanalyze the Bible. By H. F. Haas. Cloth. Price, $1. Pp. 116. Orangeburg, S. C.: Haas Publication Committee, Publishers, 1939.

The author of this book, apparently a layman who bears the same name as the publishers, attempts to expound a rationalistic attitude toward Christianity and the Bible. He exhorts the reader to adopt the methods of reason and science and to free himself from the influence of the superstitions and fears which have been distorting the true meaning and value of Christ's teaching. Much use is made of such terms as "psychoanalysis," "unconscious" and "repression," but in such a way as to make obvious that the author has no knowledge of their true meaning. The book can in no way be recommended as a serious psychologic study of the Bible.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Appendicitis Allegedly Resulting from Trauma.—Keahey fell in the course of his employment, Dec. 5, 1932, injuring his back and hip, and was paid compensation under the Texas workmen's compensation act. On March 21, 1933, he underwent an appendectomy. July 3, 1935, more than two years later, he underwent an operation for the relief of intestinal strangulation caused by adhesions which had developed following the appendectomy. He died the following day. His widow and children claimed compensation under the Texas compensation act, attributing death to the original industrial accident, but the industrial accident board rejected their claim. They then instituted proceedings before the district court, Wheeler County, Texas, which rendered judgment on a verdict of the jury in their favor, and the employer's insurer appealed to the court of civil appeals, Texas, Amarillo.

The workmen's compensation act, said the court of appeals, provides compensation for injuries arising out of and in the course of employment. The term "injury" is limited by the act to mean "damage or harm to the physical structure of the body and such diseases or infection as *naturally* result therefrom." It follows, then, that injury or death resulting from intervening, independent agencies is not compensable. Thus, if by reason of an industrial injury a workman's resistance against diseases and infections coming from other sources is reduced and he contracts and dies from those diseases and infections, his death is not compensable. *Texas Employers' Ins. Ass'n* v. *Burnett,* 105 S. W. (2d) 200.

To prove that the intestinal adhesions and the surgical operation performed on the workman July 3, 1935, to remove them were the ultimate result of the industrial injury of Dec. 5, 1932, the claimants called Dr. York, who had treated the workman in March 1935 shortly before the last operation but had not seen the workman prior to that time. Dr. York first testified that he thought the injury contributed to the disease condition of the appendix. Later he stated that in his opinion the injury caused the appendicitis but said he "couldn't just qualify on that." Still later he testified that in his belief the injury caused the appendicitis. On cross-examination he stated that he could not say "just exactly that the injury was the sole cause, but it was a highly contributing cause," because he believed that inflammation resulted from the industrial accident and, by a process of contiguity, progressed through the muscles, organs and tissues of the body from the locus of the injuries through the psoas and other muscles in the lumbar region and through the peritoneum and finally reached and involved the appendix, necessitating the appendectomy on March 21, 1933.

The value of Dr. York's testimony, said the court, depends on whether or not there was present in the region of the appendix or in the appendix itself, when the appendectomy was performed in March 1933, inflammation or infection which had originated at the locus of the injuries to the workman's back three and a half months prior thereto and whether or not such inflammation or infection caused the appendicitis. The testimony of the physician who had performed the appendectomy in question and the nurse who had assisted him was quite clear that at the time that the appendectomy was performed there was no inflammation of the tissues surrounding the appendix or bowels or any part of the abdominal cavity except the appendix itself, nor was there any black, blue or bruised spot on the patient's back or elsewhere on the body and that the workman "was suffering from an ordinary case of appendicitis." That physician further stated that the conditions which, in the opinion of Dr. York, existed in the region of the appendix and brought about its disease condition and necessitated the appendectomy did not exist. This physician further testified that he had never known or heard of a case of appendicitis resulting from a bruised back or hip and that he had never read any medical authority which reported such a case. He stated that, if the appendix had been affected by inflammation proceeding from the injuries in the patient's back, the organs and tissues in the region of the appendix and between the appendix and the locus of the injuries would have shown an inflamed or infected condition, but that he found no evidence of any inflammation or infection of any organs or tissues except the appendix. He stated that if such inflammation or infection could be so communicated it would have to go through the heavy lumbar muscles which form the back side of the body wall and then through the psoas muscle, both of which are very thick, and then it would have to proceed through the bony pelvis or ilium and the back bone and then the kidneys and other tissues in that region, and that inflammation from a bruise could not proceed through such tissues, muscles and portions of the body so as to cause appendicitis. If such a thing were possible, he said, the injury would have to be so tremendous that the patient would be dead before the results could be transmitted through such heavy structures as intervene between the back and the appendix. In his opinion there could be no possible connection between a back injury and the development of appendicitis, especially after so long an interval.

In the opinion of the court, Dr. York's testimony merely raised a surmise or suspicion that the attack of appendicitis may have been the result of the injuries to which the workman was subjected three and one-half months prior to the attack of appendicitis and did not warrant the trial court submitting the case to the jury. If, said the court, there was any connection between the original injury and the appendicitis, there must have been present, in the region of the appendix at the time that operation was performed, inflammation or infection that had its origin in the injury to the workman's back, and the existence of this condition is the very basis of Dr. York's opinion. The testimony of the operating physician and his nurse, however, leaves no room for doubt that the appendical region at the time the appendectomy was performed was, as a matter of fact, free from any such infection or inflammation and thus destroys the theory and opinion of Dr. York. The trial court should have instructed a verdict in favor of the insurance company.

The court of civil appeals accordingly reversed the judgment in favor of the widow and the children.—*Traders & General Ins. Co. v. Keahey (Texas), 119 S. W. (2d) 618.*

Malpractice: Trench Mouth Diagnosed as Syphilis.—The plaintiff consulted the physician defendant, July 28, 1936, relative to sore mouth, throat and gums, informing him that she had had "trench mouth" about two years before. The physician, without resorting to a Wassermann test, which he told her was unnecessary, from a superficial examination of the mouth and gums made a diagnosis of syphilis in an advanced stage and instituted a course of bismuth and arsenic treatments. In about two weeks her eyes became inflamed and watery, and in about three weeks her feet, ankles, arms and legs began to swell. The treatments, however, were continued until September 13. She was hospitalized September 17, at which time she was semiconscious and had pimples all over her skin from which pus and water exuded. She remained in the hospital under the defendant's care for thirteen days with no apparent improvement and was then removed to another hospital and placed under the care of Dr. Turner, who made a diagnosis of exfoliative dermatitis (arsenical), Vincent's angina and ptyalism or salivation. Eventually her hair fell out, she shed her finger and toe nails and she was affected with "lockjaw" to the extent that she could open her mouth but slightly and was unable to masticate her food. She brought suit against the defendant physician, who defended by contending that her injuries, if any, were due to an idiosyncrasy.

At the trial medical experts testified that it was not the accepted, standard or proper practice for a physician to attempt a diagnosis of syphilis without a Wassermann test, a microscopic test or a blood smear. With respect to the propriety of the defendant's continuing to administer arsenic and bismuth in the presence of inflammation of the patient's eyes, the swelling of her limbs and her entire body and the dermatitis, there was medical evidence that when symptoms of arsenic poisoning are present in a patient undergoing the therapy in question, the proper course is immediately to discontinue the treatment and

give the patient something to counteract the ill effects of the treatment. There was further medical testimony that subsequent to the defendant-physician's release from the case other physicians had made Wassermann blood tests of the patient, that none of these physicians had made a diagnosis of syphilis and that none of these physicians had treated her with arsenic or bismuth. At the close of the plaintiff's case, the trial court directed a verdict in favor of the physician-defendant and the patient appealed to the court of civil appeals of Texas, Amarillo.

The sole question to be determined by the appellate court concerned the right of the trial court under the testimony to direct a verdict in favor of the physician. While a physician, said the court of civil appeals, does not insure results, he is required to have such reasonable skill as the profession generally possesses and to exercise such skill with reasonable care and diligence. The physician here offered no testimony and the evidence adduced by the patient is undisputed that the physician informed the patient that he could make or have made a Wassermann test, that such a test or a microscopic blood test was in common use in the locality in which the defendant practiced and generally by the profession and was deemed by them essential in order to diagnose the disease of syphilis; and that the defendant made no such test but relied on the superficial examination of looking into and swabbing the mouth and throat, which was undependable and not relied on by the medical profession to determine the existence of such disease. The evidence raises fact issues as to a negligent diagnosis and as to whether the patient's damage resulted from the treatments of arsenic and bismuth administered by the defendant. The jury should have been permitted to determine these issues. The judgment in favor of the defendant-physician was accordingly reversed and the cause was remanded.—*Gifford v. Howell (Texas), 119 S. W. 578.*

Taxes: Antivivisection Activities as Charitable Activities.—For federal estate tax purposes, the Commissioner of Internal Revenue refused to allow as a deduction from the gross estate of a testator a legacy left to the New England Anti-Vivisection Society, and the executor of the will sought a reversal of the commissioner's ruling in the United States district court, D. Massachusetts.

The federal estate tax law under which this case arose provided that for the purpose of taxation the value of the net estate shall be determined by deducting from the value of the gross estate:

> The amount of all bequests, legacies, devices, or transfers . . . to or for the use of any corporation organized and operated exclusively for religious, charitable, scientific, literary, or educational purposes, including . . . the prevention of cruelty to children or animals, no part of the net earnings of which inures to the benefit of any private stockholder or individual . . .

The executor contended that the New England Anti-Vivisection Society is an organization organized and operated exclusively for charitable purposes within the meaning of the federal estate tax law.

The commonly understood and narrow meaning of the word "charity," the court said, is good will to the poor and suffering, almsgiving and provision for the care or relief of the poor (Webster's International Dictionary, ed. 2). In the law, however, a far broader and more comprehensive significance has been given to the word. The most generally accepted definition of it is found in the extensively cited case of *Ould* v. *Washington Hospital for Foundlings,* 95 U. S. 303, 24 L. Ed. 450, wherein it was said that "a charitable use, where neither law nor public policy forbids, may be applied to almost anything that tends to promote the well-doing and well-being of social man." It was clear to the court in the present case that what is done out of good will and a desire to add to the improvement of the moral, mental and physical welfare of the public generally comes within this meaning of the word "charity." The charter of the society provides that it was organized for the purpose of systematic, scientific research relative to the practice of vivisection—its relation to science and its effect on those who practice it and on society; exposing and opposing secret or painful experiments on living animals, lunatics, paupers or criminals; urging education and legislation in pursuance of these ends, and issuing posters, pamphlets and other publications. In the opinion of the court, the aims and purposes of the organization were for the public good and were charitable within the meaning of the federal estate tax law.

The evidence disclosed that the society had sponsored several bills in the Massachusetts legislature asking that dogs be exempt from the practice of vivisection. The circumstances of the society favoring the passage of this legislation, the court said, did not in any way place the society outside the provisions of the federal estate tax law. This legislation was merely incidental to carrying out the purposes and accomplishing the purposes of the society. The help of the legislature was necessary to enable it to advance its aims. Such activity was, as expressed in the case of *Slee* v. *Commissioner of Internal Revenue,* 42 F. (2d) 184, 72 A. L. R. 400, "mediate to the primary purpose, . . . ancillary to the end in chief." This incidental activity, the court concluded, did not militate against the contention that the society was "exclusively" organized and operated for charitable purposes. The ruling of the Commissioner of Internal Revenue was therefore reversed.—*Old Colony Trust Co. v. Welch, 25 F. Supp. 45.*

Workmen's Compensation Acts: Refusal of Employee to Accept Medical Treatment Tendered by Employer.—The workmen's compensation act of Indiana provides that during the first ninety days after an injury the employer "shall furnish or cause to be furnished, free of charge to the injured employee, an attending physician, for the treatment of his injuries, and in addition thereto such surgical, hospital and nurse's services and supplies as the attending physician or the industrial board deem necessary." The refusal of the employee to accept such services and supplies, when so provided by the employer, bars the employee from all compensation during the period of such refusal.

On Oct. 22, 1937, the claimant, Pipkin, as the result of his employment with the defendant corporation, sustained a right inguinal hernia. He consulted two "company doctors," furnished by the defendant, who advised against an operation because he did not have a "complete hernia." He also consulted two other physicians of his own choice who diagnosed his condition as a "complete hernia" and advised that he undergo an operation for its repair. On November 19 he requested the defendant to provide such an operation. This request was at first refused but later the defendant agreed to provide the services of one of its "company doctors" for such an operation. The claimant, however, refused to accept such services because he believed that the company doctor "did not know what was the matter with him." Instead, he submitted to an operation by a physician of his own choice. Later, he filed a claim with the industrial board of Indiana for compensation under the workmen's compensation act. The board, however, found that by his refusal to accept the medical services tendered by his employer he had forfeited his right to compensation. From an award of the board denying compensation, the claimant appealed to the appellate court of Indiana, in Banc.

The workmen's compensation act, said the appellate court, bars any employee from compensation who refuses to accept such surgical, hospital and nurse's services as the attending physician, who is furnished by the employer, or the industrial board may deem necessary. As was held in *Witte* v. *J. Winkler & Sons, Inc.,* 98 Ind. App. 466, 190 N. E. 72, the employee's refusal to accept such services does not bar his claim for compensation unless his refusal is unreasonable. Whether a refusal is or is not reasonable will depend on the facts of each particular case and is a question for the determination of the industrial board in its sound discretion. In the judgment of the court, the evidence did not show conclusively that the claimant's refusal to accept the company surgeon's services was reasonable. The qualification of the company surgeon and his ability to perform the operation were proved and undisputed. Lack of confidence in the physician, which was the claimant's sole reason for refusing to accept his services, was not a sufficient reason. If it were held to be so, it would in effect be holding that the employer must furnish a surgeon satisfactory to the employee, whereas the workmen's compensation act does not give the employee the privilege of choosing his own physician. Accordingly, the appellate court affirmed the award of the industrial board denying compensation.

Judge Laymon, in a special dissenting opinion, disagreed with the opinion of the majority of the court. In his opinion, the mere fact that an employee desires to submit to the services of a physician of his own choosing, and, by reason of that fact alone, all other facts being equal, refuses the same services proffered by his employer, does not of itself make such a refusal unreasonable. It would indeed be a harsh rule that bound an employee to submit to a surgical operation, where life and death are at stake, and to accept the services of a physician who advised against the operation, after diagnosing the case and consulting the patient, simply because the physician is being furnished by the employer. The dissenting justice relied for his opinion on the case of *Witte* v. *J. Winkler & Sons, Inc.*, supra, in which the court said:

> The question of whether an employee is justified in refusing to submit to a surgical operation proffered by his employer is one that has to do largely with the personal element. It is the employee upon whom the operation has to be performed, and his rights and interests should be seriously considered.

—*Pipkin v. Continental Steel Corporation (Ind.), 16 N. E. (2d) 984.*

Foods: Liability of Packer and Retailer for Trichinosis.—One of the defendants, a packer of meats, sold smoked pork infested with parasites known as trichinae to another defendant, a retailer of meats. The defendant retailer ground or chopped up the pork and without cooking it made it into a sausage, which he smoked for about a week. The plaintiff purchased some of the sausage from the defendant retailer and subsequent to eating it developed trichinosis. He attributed the disease to the sausage and brought suit against both the packer and the retailer in the court of common pleas, alleging that the smoked pork and the sausage were unwholesome, adulterated, diseased and infected. From a judgment of the court of appeals, Lucas County, affirming the judgment of the court of common pleas in favor of the plaintiff, the defendants appealed to the Supreme Court of Ohio.

The defendants contended, among other things, that the plaintiff was negligent in eating the sausage without cooking it. They pointed out that there was no practical method of inspecting pork for the presence of trichinae and that if the laws of Ohio impose an absolute liability on them for the sale of pork infested with trichinae such laws violate the constitutions of the United States and of Ohio. But, said the Supreme Court, a manufacturer or packer of food warrants to the public generally that the food produced by it is fit for human consumption and it is liable for a breach of that warranty. In the instant case, the liability of the packer was primary and that of the retailer was secondary. Their liability was separate, not joint, and the packer and retailer should not have been sued jointly. Because of the misjoinder of the parties defendant, the Ohio Supreme Court reversed the judgment in favor of the plaintiff and remanded the cause for action in accordance with the court's mandate.—*Kniess v. Armour & Co. (Ohio), 17 N. E. (2d) 734.*

Workmen's Compensation Acts: Hemorrhoids in Relation to Strain.—The claimant, Nantron, in the course of his employment with the defendant company, slipped while moving a "terrazzo machine" down a board onto a driveway. He claimed that he strained himself in trying to keep the machine from falling. From five to ten minutes later he felt pain in the region of the rectum. His condition was diagnosed as internal and external hemorrhoids with a rectal abscess at the base of one of the external ones. He was advised by a Dr. Webb to undergo an operation to eradicate his hemorrhoids. He disregarded this advice, however, and instead obtained treatment from another physician, who advertised the cure of piles "without a knife." An ischiorectal abcess developed which eventually resulted in the formation of a fistula. Because of his condition, he lost about three and one-half weeks of work, and after resuming work he apparently was no longer able to do heavy work. He filed a claim with the workmen's compensation commission of Missouri for compensation under the workmen's compensation act of Missouri, claiming that his hemorrhoids and subsequent complications had been caused by strain in the course of his employment. The commission found that his condition had not been caused by the accident and denied compensation. From a judgment of the circuit court affirming that award, the claimant appealed to the St. Louis court of appeals, Missouri.

Dr. Webb, one of the physicians who treated the claimant and the only witness other than the claimant to testify, in answer to a hypothetical question incorporating all the essential facts of the case and asking whether the accident had anything to do with the production of the hemorrhoids, testified: "I cannot see how a mere slipping of any kind would produce hemorrhoids unless it would cause the whole rectum to turn out and he would have immediate pain with the thing; he would suffer immediately without a lapse of any time." In his opinion, if the hemorrhoids had been due to the accident there would not have been a lapse of from five to ten minutes between the injury and the pain. In the judgment of the court of appeals, Dr. Webb's testimony furnished competent and substantial evidence to support the award of the workmen's compensation commission denying compensation. Accordingly, the judgment of the circuit court upholding the commission's award was affirmed.—*Nantron v. General Tile & Marble Co. (Mo.), 121 S. W. (2d) 246.*

Health Insurance: "Medical or Surgical Attention" Defined.—In an action on a policy of accident and health insurance the court of appeals of Georgia, division 2, agreed with the decision in *Federal Life Ins. Co.* v. *Summergill*, 45 Ga. App. 829, 166 S. E. 54, that the term "medical or surgical attention" as used in an application for health insurance means "medical or surgical attention for some illness or disease of substantial importance or of a serious nature and not consultation, treatment, or attendance concerning some trivial or temporary indisposition or feeling which has passed away without affecting the general health." In the judgment of the court, the policy of insurance was not rendered void by the denial of the insured, who later became ill with tuberculosis, in her application for insurance that she had received "medical or surgical attention" during the two years preceding her application, when in fact during that period of time she had consulted three physicians because of her spitting of blood but had been informed by them that they could find nothing the matter with her.—*North American Acc. Ins. Co. v. Gilbert (Ga.), 199 S. E. 768.*

Society Proceedings

COMING MEETINGS

American Academy of Pediatrics, Cincinnati, November 16-18. Dr. Clifford G. Grulee, 636 Church Street, Evanston, Ill., Secretary.
American Society of Anesthetists, Los Angeles, Dec. 14. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.
American Society of Tropical Medicine, Memphis, Tenn., Nov. 21-24. Dr. E. Harold Hinman, Wilson Dam, Ala., Secretary.
Association of American Medical Colleges, Cincinnati, Oct. 23-25. Dr. Fred C. Zapffe, 5 South Wabash Ave., Chicago, Secretary.
Central Association of Obstetricians and Gynecologists, Kansas City, Mo., Nov. 2-4. Dr. W. F. Mengert, University Hospitals, Iowa City, Secretary.
Central Society for Clinical Research, Chicago, Nov. 3-4. Dr. L. D. Thompson, 4932 Maryland Ave., St. Louis, Secretary.
Gulf Coast Clinical Society, Mobile, Ala., Oct. 26-27. Dr. Clyde C. Rouse, 56 St. Joseph St., Mobile, Ala., Secretary.
Inter-State Postgraduate Medical Association of North America, Chicago, Oct. 30-Nov. 3. Dr. W. B. Peck, 27 East Stephenson St., Freeport, Ill., Managing Director.
National Society for the Prevention of Blindness, New York, Oct. 26-28. Mr. Lewis H. Carris, 50 West 50th St., New York, General Director.
New York State Association of Public Health Laboratories, Albany, Nov. 3. Miss Mary B. Kirkbride, New Scotland Ave., Albany, Secretary.
Omaha Mid-West Clinical Society, Omaha, Oct. 23-27. Dr. J. D. McCarthy, 107 S. 17th St., Omaha, Secretary.
Pacific Coast Society of Obstetrics and Gynecology, Portland, Ore., Nov. 8-11. Dr. T. Floyd Bell, 400 29th St., Oakland, Calif., Secretary.
Radiological Society of North America, Atlanta, Ga., Dec. 11-15. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.
Society for the Study of Asthma and Allied Conditions, Philadelphia, Dec. 9. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.
Southern Medical Association, Memphis, Tenn., Nov. 21-24. Mr. C. P. Loranz, Empire Bldg., Birmingham, Ala., Secretary.
Southern Surgical Association, Augusta, Ga., Dec. 5-7. Dr. E. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.
Southwestern Medical Association, El Paso, Texas, Nov. 9-11. Dr. M. P. Spearman, 1001 First National Bank Bldg., El Paso, Texas, Secretary.
Tri-States Medical Society of Texas, Louisiana and Arkansas, Marshall, Texas, Nov. 8-9. Dr. Robert K. Womack, Longview, Texas, Secretary.
Western Surgical Association, Los Angeles, Dec. 15-16. Dr. Albert H. Montgomery, 122 South Michigan Blvd., Chicago, Secretary.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

18: 133-260 (Aug.) 1939

Electrocardiographic Picture of Experimental Localized Pericarditis. H. B. Burchell, A. R. Barnes and F. C. Mann, Rochester, Minn.—p. 133.

*Prognosis of Intraventricular Block. L. G. Kaplan and L. N. Katz, Chicago.—p. 145.

*Effect of Oxygen on Exercise Tolerance of Patients with Angina Pectoris. J. E. F. Riseman and M. G. Brown, Boston.—p. 150.

Cardiac Neurosis Associated with Organic Heart Disease. S. Schnur, Brooklyn.—p. 153.

Acute Endocarditis in Wild Animals, with Especial Reference to Opossum. H. Fox, Philadelphia.—p. 166.

Effects of Whole Bile and Bile Salts on Perfused Heart. K. G. Wakim, H. E. Essex and F. C. Mann, Rochester, Minn.—p. 171.

Congenital Heart Disease: Report of Case of Dextroposition, Persistence of Early Stage of Embryonic Development of Heart, Persistent Truncus Arteriosus, Abnormal Systemic and Pulmonic Veins and Subdiaphragmatic Situs Inversus. D. W. Goltman and N. S. Stern, Memphis, Tenn.—p. 176.

Medionecrosis Aortae Idiopathica Cystica: Report of Case, with "Healed" Dissecting Aneurysm. J. T. Roberts, Cleveland.—p. 188.

Effects of Diphtheria Toxin on Heart. R. W. Boyle, C. H. McDonald and A. F. DeGroat, Little Rock, Ark.—p. 201.

Effect of Carbon Dioxide Inhalation on Peripheral Blood Flow in Normal and in Sympathectomized Patient. I. E. Steck and E. Gellhorn, Chicago.—p. 206.

Value of Special Radiologic Procedures in Detecting Cardiac Enlargement in Children with Rheumatic Heart Disease. Ann G. Kuttner and Gertrude Reyersbach, Irvington-on-Hudson, N. Y.—p. 213.

Measurement of Circulation Time with Calcium Gluconate in Patients Receiving Digitalis, with Electrocardiographic Studies. H. C. Wall, New Orleans.—p. 228.

Prognosis of Intraventricular Block.—Kaplan and Katz collected data from the hospital and clinical records of 126 patients whose electrocardiograms conformed to the criteria for the various varieties of intraventricular block, all showing a QRS duration of 0.11 second or more. They find that the character of the underlying disease, rather than the presence or absence of intraventricular block, determines the prognosis, although the presence of intraventricular block carries with it a high mortality rate in the first year (particularly in the first three months). The fatality rate within a year of the discovery of the conduction lesion was 80 per cent. Patients surviving this period have a materially better life expectancy, as another 10 per cent died within the second year and some of the remaining 10 per cent survived up to the seventh year. Apparently, a relatively benign type of intraventricular block occurs. Therefore the configuration of the electrocardiogram or the duration of the QRS deflection is of no prognostic significance.

Oxygen, Exercise Tolerance and Angina Pectoris.—Riseman and Brown describe the effect of breathing high concentrations of oxygen on the amount of work which seventeen patients with angina pectoris could do before pain developed. Breathing room air from the Douglas bags did not increase and in several instances actually caused a decrease in the amount of work which could be done before pain developed. Breathing oxygen from the Douglas bags enabled eleven of the seventeen patients to do considerably more work; four exercised until forced to stop because of fatigue without developing pain. Nine of these eleven patients were from 39 to 53 years of age. Two were 57 and 58 years old. Seven patients found that it required more than thirty-five trips (mount and descend a two step staircase) to induce pain while breathing room air; the other four patients felt pain on less than thirty-five trips. The remaining six of the seventeen patients were not able to do any more work while breathing oxygen. Only one of these patients was less than 53 years of age, and only two could perform more than thirty-five trips before angina developed. The data are consistent with the anoxemia theory of angina pectoris.

American Journal of Diseases of Children, Chicago

58: 457-690 (Sept.) 1939

*Obesity in Childhood: I. Physical Growth and Development of Obese Children. Hilde Bruch, New York.—p. 457.

Enterogenous Intramural Cysts of Intestines. D. J. Pachman, Chicago.—p. 485.

New Creatinine Standard for Basal Metabolism and Its Clinical Application. N. B. Talbot, Jane Worcester and Ann Stewart, Boston.—p. 506.

*Prevention of Diphtheria. H. P. G. Seckel, Chicago.—p. 512.

Old Tuberculin and Purified Protein Derivative in Tuberculin Patch Test: Comparative Study. H. Vollmer, New York, and Esther W. Goldberger, Staten Island, N. Y.—p. 527.

*Influence of Fluid and of Evaporated Milk on Mineral and Nitrogen Metabolism of Growing Children. Helen J. Souders, Helen A. Hunscher, Frances C. Hummel and Icie G. Macy, with assistance of Mary F. Bates, Marion L. Shepherd, Priscilla Bonner, J. Horton, A. Theresa Johnston and Louise Emerson, Detroit.—p. 529.

Hyperparathyroidism in Children: Report of Two Cases. W. E. Anspach and W. M. Clifton, Chicago.—p. 540.

Importance of Sensitization Mechanism in Clinical Phenomenon of Allergy: Possible Cause and Prevention. E. B. Shaw and H. E. Thelander, San Francisco.—p. 581.

Causes of Prematurity: I. Review of Literature. Nina A. Anderson and R. A. Lyon, Cincinnati.—p. 586.

Development of Obese Children.—Bruch studied the growth and development of 102 children from 2 to 13 years of age whose obesity was the principal clinical symptom and she compared her observations with results obtained in normal children. One aim of the study was to establish an objective basis for the diagnosis of the underlying endocrine disorder, if any, through an analysis of the progress in growth. She finds that in obese children growth in stature is in excess of the average normal but in harmony with the height development of children who mature early. Skeletal maturation is normal or advanced, certainly not delayed. The menarche in obese girls occurs early, in several instances before the age of 10 years. More than 50 per cent of the boys between 11 and 14 years old show signs of approaching or attained puberal development. The high weight of the obese child is considered as an exaggeration of a normal trend. The observations of intensive growth and early maturation are not consistent with theories which attempt to explain obesity on the basis of hypothyroidism and hypopituitarism; they agree with observations of the growth-promoting effect of abundant nutrition.

Prevention of Diphtheria.—Seckel discusses three factors relating to the prevention of diphtheria. 1. The best statistical method of checking the efficiency of active immunization against diphtheria is the so-called control series method. Diphtheria morbidity in immunized children is only one third to one eighth or even less than that of nonimmunized children. The statistical method of comparing the diphtheria morbidity in a given area before and after the introduction of immunization should not be used for scientific purposes except against the background of the secular waves of diphtheria morbidity. 2. In general, the "severity" of diphtheria in immunized children is less than in nonimmunized controls. If the clinical typology of diphtheria in immunized children is analyzed statistically (according to Escherich's types), there is found an overwhelming majority of cases of localized pharyngeal diphtheria, an almost complete disappearance of diphtheritic croup and about the same percentage of cases of toxic diphtheria as for nonimmunized children. The last two types of severe diphtheria are clinically less alarming in immunized children than they are in the control groups. 3. While antitoxin therapy reaches the natural limits of its preventive efficiency in cases of progressive toxic and malignant diphtheria, its limits may be in part overcome by nonspecific preventive treatment: parenteral protein therapy and intravenous dextrose therapy. The two types of nonspecific treatment are combined in a routine way with the injection of medium doses of diphtheria antitoxin and may, in cases of malignant diphtheria, be combined with each other.

Type of Milk and Mineral and Nitrogen Metabolism.—Souders and her collaborators determined the relative efficiency of plain fluid and of evaporated milk in meeting the mineral and nitrogen demands of the growing child. The nitrogen and acid-base mineral balance study was conducted on three healthy growing children (from 4½ to 6 years old) who received a basal diet of inexpensive foods, always available, which conformed with accepted nutritive standards. Each child received 400 Gm. of plain fluid milk daily for from twenty-five to forty days; during the following twenty to twenty-five days the same

quantity of plain evaporated milk (diluted 1:1) was included in the diet, and finally for the next twenty-five days each child received an identical quantity of irradiated evaporated milk (diluted 1:1). The only changes in the dietary during the three study periods was the substitution of milk. An added impetus in the forming of soft tissue resulted from the substitution of evaporated for fluid milk. This was shown by the parallel increases in retention of nitrogen, sulfur and potassium, which were not accompanied by corresponding increases in retention of the other elements. When irradiated evaporated milk was included in the diet, the increased calcium-phosphorus ratios of the retentions, the higher levels and more consistent trends of the acid-base balances and the increase in rate of gain in recumbent length all indicated a more rapid and stable rate of osseous formation.

American Journal of Physiology, Baltimore

127: 211-414 (Sept.) 1939. Partial Index

Electrosaltatory Transmission of Nerve Impulse and Effect of Narcosis on Nerve Fiber. I. Tasaki, Tokyo, Japan.—p. 211.
Respiratory and Circulatory Responses to Intravenous Oxygen and Their Relation to Anoxemia. M. Dick, Durham, N. C.—p. 228.
Effects of Adrenalin on Reflex Excitability of Autonomic Nervous System. C. W. Darrow and E. Gellhorn, Chicago.—p. 243.
Ventricular Rate in Faradically Maintained Auricular Fibrillation: Index of Auriculoventricular Conductivity. S. A. Carlen and L. N. Katz, Chicago.—p. 272.
Effect of Hydrogen Ion Concentration Changes on In Vitro Oxygen Consumption of Tissues. A. Canzanelli, M. Greenblatt, Gertrude A. Rogers and D. Rapport, Boston.—p. 290.
Electrophysiologic Studies on Motility of Gastrointestinal Tract. E. Bozler, Columbus, Ohio.—p. 301.
Studies on Genesis of Ischemic Pain: Influence of Potassium, Lactate and Ammonium Ions. G. L. Maison, St. Louis.—p. 315.
Fifth Stage of Transmission in Autonomic Ganglions. A. Lanari and A. Rosenblueth, Boston.—p. 347.
Fate of Potassium Liberated from Muscles During Activity. W. O. Fenn, Rochester, N. Y.—p. 356.
Electrolytes of Muscle and Liver in Potassium Depleted Rats. L. A. Heppel, Rochester, N. Y.—p. 385.

Annals of Surgery, Philadelphia

110: 321-480 (Sept.) 1939

*Surgical Management of Patent Ductus Arteriosus, with Summary of Four Surgically Treated Cases. R. E. Gross, Boston.—p. 321.
Revaluation of Treatment of Head Injuries. J. Browder and R. Meyers, Brooklyn.—p. 357.
*Massive Hemorrhage in Peptic Ulcer: Transfusion Test for Determining the Necessity of Operation. J. W. Hinton, New York.—p. 376.
Value of Cecostomy as Complementary and Decompressive Operation. F. W. Rankin, Lexington, Ky.—p. 380.
Retroperitoneal Chyle Cysts, with Especial Reference to Lymphangiomas. J. C. A. Gerster, New York.—p. 389.
Role of Nervous System in Acute Intestinal Obstruction: Experimental Investigation. J. Fine, L. Rosenfeld and S. Gendel, Boston.—p. 411.
Treatment of Volkmann's Ischemic Contracture. H. W. Meyerding and F. H. Krusen, Rochester, Minn.—p. 417.
Solitary Myeloma of Bone: Clinical and Pathologic Entity. J. G. Pasternack and R. L. Waugh, New Orleans.—p. 427.
Operation for Cure of Flatfoot. B. L. Schoolfield, Dallas, Texas.—p. 437.
Treatment of Ankle Malunion: Study of End Results. W. R. Hamsa, Omaha.—p. 447.

Surgical Management of Patent Ductus Arteriosus.—Gross advises surgical obliteration for avoiding the complications to which the possessor of a patent ductus is liable. The operative steps for accomplishing this task were studied on postmortem material, were practiced on dogs and are described. The author states that the ductus can be adequately exposed by an approach through the left pleural cavity, entering the superior mediastinum from its left lateral aspect. The feasibility of the method is demonstrated by the report of four patients on whom it was performed without mortality or complications. The results indicate that the ductus can be explored with safety and that it can be permanently ligated in most instances. It is important to recognize the condition, as surgery has much to offer these individuals. When there are no serious complicating cardiovascular lesions, surgical closure of the ductus can be performed with low risk and should ward off the dangers of subacute bacterial endocarditis and cardiac failure.

Massive Hemorrhage in Peptic Ulcer.—During a period of ten years, 135 cases of massive hemorrhage were encountered at the Bellevue Hospital, and twelve deaths occurred under conservative medical management. Hinton states that six of the patients died without blood transfusions and six after one or more transfusions. It would seem, therefore, that a definite percentage of massive hemorrhages will prove fatal under either type of conservative management; i. e., regardless of transfusions. The location of the ulcer is an important factor in hemorrhage. It is the posterior duodenal ulcer (ten) that is most likely to prove fatal. Since the posterior duodenal ulcer frequently bleeds without having shown any previous gastric symptoms (18 per cent of the 135 patients had a negative gastric history), a posterior duodenal ulcer must be ruled out before one attributes the cause of gastric hemorrhage to gastritis. More than one negative gastrointestinal x-ray study should be obtained; the gastroscope is of no aid in making a diagnosis of posterior duodenal ulcer. Patients who continue to have hemorrhage under medical management become the province of the surgeon. In these cases operation during the acute stage may be a life saving measure. Blood transfusions may prove a helpful method of selecting the patients who urgently require such operation. When the blood pressure has fallen to 80/60, the erythrocyte count to 2,000,000 or less, and the hemoglobin to 35 per cent or thereabouts the patient needs supportive measures. A transfusion is the best way of overcoming the shock and the reduced blood volume. In addition, the transfusion may indicate whether operation is necessary or whether conservative measures should be continued. If, after 500 cc. of blood have been given, the red cell count, the hemoglobin and the blood pressure remain low, one may assume that a large vessel has been eroded. If the procedure is repeated and there is still no improvement, it is fairly conclusive evidence that further delay may prove fatal. A continuous transfusion of 1,000 cc. of citrated blood should then be started and the patient operated on as soon as possible. Further delay at this time would probably result in a fatality. The apparently hopeless case will withstand a subtotal resection surprisingly well.

Archives of Ophthalmology, Chicago

22: 351-532 (Sept.) 1939

Traumatic Retinal Angiopathy. A. J. Bedell, Albany, N. Y.—p. 351.
Sensitization of Rabbits to Uveal Tissue by Synergic Action of Staphylotoxin. H. Lucic, Baltimore.—p. 359.
Epithelial Plaques of Conjunctiva and Cornea. J. V. V. Nicholls, Montreal.—p. 370.
Subconjunctival Injections of Neoprontosil in Treatment of Ocular Infections. R. T. Paton, New York.—p. 377.
Changes in Angioscotomas Associated with Inhalation of Oxygen. C. M. Rosenthal, Brooklyn.—p. 385.
*Relation Between Virus of Trachoma and Virus of Inclusion Blennorrhea. A. E. Braley, Iowa City.—p. 393.
Form and Power of Contact Lenses. J. I. Pascal, New York.—p. 399.
Suggestions for New Design of Stock Contact Lenses. H. Eggers, New York.—p. 403.
*Determination of Sulfanilamide in Aqueous and Vitreous After Conjunctival and Oral Administration. W. G. Mengel, Philadelphia.—p. 406.
Classic Characteristics of Defects of Visual Field. J. N. Evans, Brooklyn.—p. 410.
Diktyoma Retinae. Bertha A. Klien, Chicago.—p. 432.
Penetrating Injuries of Globe from Spectacle Glass: Report of Four Cases. W. D. Horner, San Francisco.—p. 439.
History of a Marble Bust of von Graefe. R. L. Pfeiffer, New York.—p. 446.
Origin of Vertebrate Eye. G. L. Walls, Detroit.—p. 452.

Trachoma and Inclusion Blennorrhea Viruses.—According to the studies of Braley on four baboons, the virus of trachoma, like the virus of inclusion blennorrhea, produces a cervicitis which, when transferred to the conjunctiva, produces follicular conjunctivitis. Both viruses have an affinity for the transitional epithelium of the cervix and produce an initial epithelial hyperplasia. No conjunctival immunity is produced by infection in the cervix in either disease. The virus of inclusion blennorrhea produces a short infection, while the virus of trachoma gives rise to a prolonged infection. The severity of symptoms produced by the two viruses is equal. Since the two viruses produce a similar pathologic condition, a similarity in their nature appears probable.

Concentration of Sulfanilamide in the Eye.—Mengel determined the concentration of sulfanilamide in the aqueous and vitreous after oral and local administration. He made the investigations on blind eyes. The amount of sulfanilamide absorbed into the aqueous from the conjunctival culdesac was less than 0.1 mg. per hundred cubic centimeters, whereas a concentration of from 1.5 to 3.2 mg. per hundred cubic centimeters was found in the aqueous and vitreous after oral administration. Thirty-two minutes after its ingestion sulfanilamide was found in the vitreous in a concentration of 1.1

mg. per hundred cubic centimeters. The therapeutic value of sulfanilamide is known for infections caused by certain microorganisms elsewhere in the body, and therefore because of its rapid diffusion in the ocular fluids it should be considered equally valuable for the treatment of infections of the eye caused by these same organisms.

Archives of Pathology, Chicago

28: 283-426 (Sept.) 1939

Carcinoma Cells in Thoracic and in Abdominal Fluids. M. J. Schlesinger, Boston.—p. 283.
Cerebral Lesions in Hypoglycemia: III. Experimental Investigations. A. B. Baker, Minneapolis.—p. 298.
New Formation of Elastic Tissue in Adhesions Between Serous Membranes and in Myocardial Scars. C. H. Bunting, Madison, Wis.—p. 306.
Histologic Study of Reparation of Experimentally Produced Defects in Calvariums of Rats. C. J. Sutro and S. A. Jacobson, New York.—p. 313.
Chemotropism of Human Eosinophilic Polymorphonuclear Leukocytes. E. S. Ingraham and W. B. Wartman, Cleveland.—p. 318.
Genesis of Infarction. L. Loeffler, Decatur, Ill.—p. 323.
*Incidence and Significance of Healed Miliary Tubercles in Liver, Spleen and Kidneys. H. S. Reichle and J. L. Work, Cleveland.—p. 331.
Action of Estrogen on Skeletal Tissues of Immature Guinea Pigs. M. Silberberg and Ruth Silberberg, St. Louis.—p. 340.
Anitschkow "Myocyte." J. C. Ehrlich and B. Lapan, New York.—p. 361.
Changes in Prostate Caused by High Frequency Current. L. A. Maslow, Chicago, and E. Martos, Budapest, Hungary.—p. 371.
Medial Degeneration of Aorta: Study of 210 Routine Autopsy Specimens by Serial Block Method. A. Rottino, New York.—p. 377.

Healed Miliary Tubercles in Viscera.—Because of a tentative hypothesis that the small calcified bodies occurring in the liver, spleen and other parenchymatous viscera are miliary tubercles, Reichle and Work conducted a systematic study on material obtained at necropsy in 500 consecutive cases. In the search for these lesions, particular care was taken to examine the organs for manifestations of active, latent or healed tuberculosis. Approximately two thirds of the lungs were injected with solution of formaldehyde U. S. P. (diluted 1 to 10) and sectioned. The remaining material was examined in the fresh state. Partial necropsies and necropsies on stillborn infants, premature infants and infants who died before discharge from the hospital were excluded. There were forty-eight such cases; 452 cases remain. Nodules were found in one or several of the parenchymatous organs in ninety-one, an incidence of 20.1 per cent. This is a high incidence, since few conditions other than parenchymatous degeneration, hyperemia, edema, primary tuberculosis and arteriosclerosis occur in more than one fifth of the bodies coming to necropsy in the Cleveland City Hospital. The nodules were not phleboliths but true miliary tubercles. They are microscopically indistinguishable from small primary tubercles. Animal inoculation demonstrated the presence of tubercle bacilli. Their distribution points to hematogenous dissemination and their morphology to some association in point of time with the primary complex. The high correlation between apparent resistance to progressive tuberculosis and the incidence of these lesions leads to the suggestion that this dissemination acts as an autovaccination, conferring a relatively high resistance to reinfection. The spleen was most commonly affected, in seventy-three of the ninety-one cases, the liver in forty-seven and the kidneys in two. In the liver they were usually situated just beneath but not within the capsule and were only occasionally found in the deeper parenchyma. In the spleen they were commonly encountered deep in the pulp and infrequently beneath the capsule. The nodules bore no necessary relation to the structure of the organ in which they occurred or to its blood vessels. They could be easily extracted from the parenchyma but could never be shelled out of a casing such as is consistently found about a phlebolith. The number of lesions varied widely. In a few cases only one or two nodules were found while in others they numbered several hundred.

Bulletin New York Academy of Medicine, New York

15: 577-636 (Sept.) 1939

Some Difficulties in Use of Insulins in Diabetic Practice. W. R. Campbell, Toronto.—p. 579.
Treatment of Postabortal and Postpartum Sepsis, with Special Consideration of Sulfanilamide and Allied Drugs. E. G. Waters, Jersey City, N. J.—p. 597.
Pathogenesis and Present Day Treatment of Urinary Infections. M. F. Campbell, New York.—p. 609.

Journal of Bacteriology, Baltimore

38: 121-248 (Aug.) 1939

Virus of Psittacosis: I. Propagation and Developmental Cycle in Egg Membrane, Purification and Concentration. A. S. Lazarus and K. F. Meyer, San Francisco.—p. 121.
Id.: II. Centrifugation, Filtration and Measurement of Particle Size. A. S. Lazarus and K. F. Meyer, San Francisco.—p. 153.
Id.: III. Serologic Investigations. A. S. Lazarus and K. F. Meyer, San Francisco.—p. 171.
Comparison of Hydrogen Production from Sugars and Formic Acid by Normal and Variant Strains of Escherichia Coli. E. J. Ordal and H. O. Halvorson, Minneapolis.—p. 199.
Inhibition of Proteinases of Certain Clostridia by Serum. L. D. Smith and C. H. Lindsley, Philadelphia.—p. 221.

Journal of Clinical Investigation, New York

18: 497-616 (Sept.) 1939

Magnesium Content of Erythrocytes in Pernicious and Some Other Anemias. O. Bang, Copenhagen, Denmark, and S. L. Ørskov, Aarhus, Denmark.—p. 497.
Rate of Attainment of Diffusion Equilibrium for Thiocyanate Between Plasma and Transudates Following Intravenous Injection of Sodium Thiocyanate in Patients with Edema. D. R. Gilligan and M. D. Altschule, Boston.—p. 501.
*Formation of Methemoglobin and Sulfhemoglobin During Sulfanilamide Therapy. J. S. Harris and H. O. Michel, Durham, N. C.—p. 507.
The In Vitro Formation of an Oxidizing Agent by Surviving Tissues and Sulfanilamide. J. S. Harris, Durham, N. C.—p. 521.
*Clinical Studies of Blood Volume: VII. Changes in Blood Volume in Bright's Disease With or Without Edema, Renal Insufficiency, or Congestive Heart Failure, and in Hypertension. A. W. Harris and J. G. Gibson 2d, Boston.—p. 527.
Inability to Demonstrate a Platelet Reducing Substance in an Acetone Extract of Spleen from Patients with Idiopathic Thrombocytopenic Purpura. F. J. Pohle and O. O. Meyer, Madison, Wis.—p. 537.
Studies in Iron Transportation and Metabolism: III. Normal Fluctuations of Serum and "Easily Split-Off" Blood Iron in Individual Subjects. C. V. Moore, Virginia Minnich and Jo Welch, Columbus, Ohio.—p. 543.
Id.: IV. Observations on Absorption of Iron from Gastrointestinal Tract. C. V. Moore, W. R. Arrowsmith, Jo Welch and Virginia Minnich, Columbus, Ohio.—p. 553.
Treatment of Acute Alcoholism with Glucose and Insulin. W. Goldfarb, K. M. Bowman and S. Parker, with technical assistance of B. Krautman, New York.—p. 581.
Blood V-Factor (Coenzyme) Level in Normal and Pathologic Subjects. H. I. Kohn and F. Bernheim, with technical assistance of A. V. Felsovanyi, Durham, N. C.—p. 585.
Treatment of Gas Gangrene Infections in Guinea Pigs with Neoprontosil, Sulfanilamide and Sulfapyridine: Experimental Study. D. B. Kendrick Jr., Rochester, Minn.—p. 593.
Ultrafiltrable Magnesium in Hyperthyroidism. L. J. Soffer, D. A. Dantes, E. B. Grossman, H. Sobotka and Mildred D. Jacobs, New York.—p. 597.
Coagulation Defect in Hemophilia: Clot Promoting Activity in Hemophilia of Berkefelded Normal Human Plasma Free from Fibrinogen and Prothrombin. E. L. Lozner, R. Kark and F. H. L. Taylor, Boston.—p. 603.
*Occurrence of Abnormal Dark Adaptation and Its Relation to Vitamin A Metabolism in Patients with Cirrhosis of Liver. A. J. Patek Jr. and C. Haig, New York.—p. 609.

Methemoglobin, Sulfhemoglobin and Sulfanilamide.—Harris and Michel assayed quantitatively the effect of sulfanilamide on the formation of abnormal heme pigments. There were 960 blood examinations made on 476 patients. Methemoglobin, in quantities demonstrable by the hand spectroscope, was found in the erythrocytes of 277, or 58 per cent, of the patients at some time during the administration of sulfanilamide. The percentage of patients developing methemoglobinemia is roughly equal in the sexes but is higher in the young. Since the extent of methemoglobinemia did not increase markedly with the duration of dosage, it is not a cumulative effect of the drug and does not depend on the total dose of sulfanilamide. It is possible that the development of methemoglobinemia is favored by the presence of larger concentrations of circulating hemoglobin. To analyze this factor, 647 determinations on patients who showed methemoglobinemia at some time during their course of therapy were arranged in accordance with the hemoglobin content and the level of blood sulfanilamide. It was found that the percentage of bloods positive for methemoglobin in each sulfanilamide level group did not vary with the hemoglobin content. However, the average methemoglobin concentration showed a tendency to vary in direct relation to the amount of hemoglobin present, so that the average methemoglobin/total hemoglobin ratio remained rather constant at each blood sulfanilamide level. The blood hemoglobin levels were rather evenly distributed and unaltered by the age, sex and sulfanilamide concentration of patients. Sulfhemoglobinemia was more frequent after long courses of sulfanilamide but did not bear any relationship to age, sex or the concentration of sulfanilamide or

methemoglobin in the blood. On the basis of these observations, it is postulated that an active substance is normally produced in the course of sulfanilamide metabolism which causes the production of methemoglobin and sulfhemoglobin. The data presented are found to agree with the concept that methemoglobinemia depends on the balance of the formation of the active agent, oxidation of hemoglobin under the influence of the active agent and reduction of methemoglobin by the body.

Blood Volume in Nephritis.—Harris and Gibson observed the course of the plasma and total blood volume in nephritis. Three factors appear to be concerned in the regulation of the plasma volume: serum albumin concentration, nonprotein nitrogen concentration and the degree of anemia. Regardless of the stage of the disease, whether acute, subacute or chronic, with or without edema or renal insufficiency, the level of the plasma volume reflects the interrelationship of these three factors. The relationship of the changes in plasma and circulating erythrocyte volume is such that the total blood volume always remains below normal. With development of congestive heart failure, regardless of the degree of anemia present, an additional factor appears to be introduced resulting in an increased circulating erythrocyte volume and hence increased total blood volume. In the edematous stage hypoproteinemia tends to diminish, and, if present, anemia tends to augment the plasma volume. During diuresis there is a tendency for the plasma volume to increase chiefly in relation to the increase in the albumin fraction of the serum protein. Circulation time in the group of cases exhibiting subacute glomerular nephritis with edema (nephrosis syndrome) was slower than in the group with chronic nephritis without edema. The lowered metabolism characteristic of the former group may explain this paradoxical observation.

Dark Adaptation, Vitamin A Metabolism and Cirrhosis.—Whether vitamin A deficiency occurs in patients with hepatic disease whose intake of the vitamin is adequate and who are not jaundiced was determined by Patek and Haig by studies on vitamin A metabolism in twenty-four cases of cirrhosis of the liver. The studies show that patients with cirrhosis of the liver may be deficient in vitamin A. The deficiency is not attributable to an inadequate intake of the vitamin in their food. Although the selected cases were free of jaundice, it is possible that malabsorption contributed to the deficiency. The patients' resistance to oral therapy might be so interpreted. Abnormal dark adaptation was observed in nineteen of the twenty-four cases. In certain cases both elevation of the final rod and cone thresholds and delay of rod dark adaptation occurred. In most instances only the latter change took place. These changes were unrelated to jaundice. They tended to persist in the presence of a nutritious diet, rich in vitamin A. The oral and parenteral administration of vitamin A concentrates was followed by extensive improvement. Cone and rod thresholds were lowered and speed of adaptation was increased. This improvement was only partially maintained after treatment was discontinued. These data suggest that abnormal dark adaptation in patients with cirrhosis of the liver is due chiefly to altered intermediary metabolism of vitamin A.

Journal of Experimental Medicine, New York

70: 223-332 (Sept.) 1939

Production of Kidney Antibodies by Injection of Homologous Kidney Plus Bacterial Toxins. F. F. Schwentker and F. C. Comploier, Baltimore.—p. 223.

Culture Flask for Circulation of Large Quantity of Fluid Medium. C. A. Lindbergh, New York.—p. 231.

Immunologic Relationship of Capsular Polysaccharide of Type XIV Pneumococcus to Blood Group A Specific Substance. P. B. Beeson and W. F. Goebel, New York.—p. 239.

Studies on Bactericidal Agent Extracted from Soil Bacillus: III. Preparation and Activity of Protein-Free Fraction. R. J. Dubos and C. Cattaneo, New York.—p. 249.

Manner of Growth of Frog Carcinoma, Studied by Direct Microscopic Examination of Living Intra-Ocular Transplants. B. Lucké and H. Schlumberger, Philadelphia.—p. 257.

Characteristics of Frog Carcinoma in Tissue Culture. B. Lucké, Philadelphia.—p. 269.

Passage of Proteins from Vascular System into Joints and Certain Other Body Cavities. G. A. Bennett and M. F. Shaffer, Boston.—p. 277.

Passage of Type III Rabbit Virulent Pneumococci from Vascular System into Joints and Certain Other Body Cavities. M. F. Shaffer and G. A. Bennett, Boston.—p. 293.

Encephalopathy Following Injections of Bone Marrow Extract. L. S. King, Princeton, N. J.—p. 303.

Further Contribution to Vitamin C Therapy in Experimental Poliomyelitis. C. W. Jungeblut, New York.—p. 315.

Journal of Pediatrics, St. Louis

15: 157-316 (Aug.) 1939

Immunologic Relationships Between Cow's Milk and Goat's Milk. L. W. Hill, Boston.—p. 157.

Acute Coccidioidomycosis with Erythema Nodosum in Children. H. K. Faber, C. E. Smith and E. C. Dickson, San Francisco.—p. 163.

Relation of Dysentery to Acute Diarrhea of Infants and Children. M. L. Cooper, M. L. Furcolow, A. G. Mitchell and G. E. Cullen, with assistance of Helen M. Keller, Barbara Johnson, Janet P. Milliken, H. F. Marsh, F. J. Grabill and G. W. Thomas, Cincinnati.—p. 172.

Vitamin A Absorption in Celiac Disease. B. B. Breese Jr. and Augusta B. McCoord, Rochester, N. Y.—p. 183.

Test for Determination of Vitamin C Storage: Vitamin C Index. L. Kajdi, J. Light and Charlotte Kajdi, Baltimore.—p. 197.

*Comparison of Vollmer Tuberculin Patch Test with Purified Protein Derivative: Results of Tests on 880 Rural School Children in St. Mary's County, Maryland. E. C. Peck and M. E. Wegman, Baltimore.—p. 219.

*Study of 1,852 Chest Roentgenograms of Tuberculous Contacts Under Age of 5 Years. H. A. Rosenberg and M. I. Levine, New York.—p. 224.

Value of Roentgenographic Examination in Diagnosis of Syphilis in Newborn Infants. A. U. Christie, San Francisco.—p. 230.

Treatment of Scarlet Fever with Specific Antitoxins of Low Protein Content. J. A. Toomey and E. R. Kimball Jr., Cleveland.—p. 238.

Control of Common Contagious Diseases in Pediatric Wards of a General Hospital. C. C. Fischer and C. S. Raue, Philadelphia.—p. 245.

Multiple Cystic Tuberculosis of Bones: Report of Case. D. W. Martin, Durham, N. C.—p. 254.

Comparison of Tuberculin Tests.—Over a period of two months Peck and Wegman performed tuberculin tests on 880 school children. Their ages varied from 5 to 21. The first and second purified protein derivative doses were injected intradermally and the Vollmer patch test was applied to the skin. The first purified protein derivative dose was injected and the patch test applied on the same day and both were read two days later. Those children who were negative to the first purified protein derivative test were tested with the second purified protein derivative dose and this was read two days later. In all cases in which the patch test was positive, it was found that it was as definite on the second day as it was on the first day, or even stronger, indicating that one may read the test forty-eight hours after removal of the adhesive tape just as well as after twenty-four. At least one of the three tests used was positive in 319, or 36.2 per cent, of the children. The patch test was far inferior to purified protein derivative in detecting tuberculin reactors. It was not even as good as the first strength of purified protein derivative, even though the patch test did pick up some reactors who were negative to the first strength of purified protein derivative. The patch test did pick up eighteen, or 9.6 per cent, of the 188 in which the first dose of purified protein derivative was negative. By contrast, however, the first dose of purified protein derivative detected fifty-five, or 24.4 per cent, of the 225 in which the patch was negative. It seems to be clear that the patch alone cannot replace purified protein derivative either as a diagnosticum for the individual patient or as a case-finding procedure in public health work. Because of the obvious convenience of the patch test, a possible field of usefulness suggests itself. One might employ the patch for the primary test in place of purified protein derivative, recognizing that if the test is negative it must be followed by the second strength of purified protein derivative before a definite opinion can be given.

Chest Roentgenograms of Tuberculous Contacts.—Rosenberg and Levine studied 1,852 roentgenograms of the chests of 584 infants, varying in age from birth to 5 years, from tuberculous homes. Among 379 cases in which Mantoux tests were negative, the incidence of tracheobronchial shadows alone was 6.8 per cent and the incidence of parenchymal shadows was also 6.8 per cent. Among 205 cases in which Mantoux tests were positive, the incidence of tracheobronchial shadows was 9.2 per cent and that of parenchymal shadows was 40 per cent. Increased tracheobronchial shadows persisted for more than three months in 26.6 per cent of the cases in which the Mantoux tests were negative, as against 71.3 per cent of the cases in which the tuberculin test was positive. Parenchymal shadows persisted on subsequent examination for three months or more in eight of sixteen of the negative Mantoux cases and in sixty-one of the sixty-six positive tuberculin cases. Infants dying of tuberculosis generally show demonstrable parenchymal shadows on a roentgenogram. Since miliary tuberculosis was the most frequent cause of death in the series of cases, the diagnosis of lethal forms of tuberculosis by x-ray examination

was readily made. Increased tracheobronchial shadows in infancy may not be accepted as pathognomonic of tuberculosis, even in the presence of a positive Mantoux test. However, a majority of the parenchymal lesions in tuberculin positive infants are probably tuberculous in nature.

New England Journal of Medicine, Boston

221: 291-328 (Aug. 24) 1939

Transient, Recurrent Bundle Branch Block. H. Miller and F. T. Fulton, Providence, R. I.—p. 291.
*Phenolphthalein Test in Diagnosis of Gastrointestinal Disease. B. M. Banks and L. E. Barron, Boston.—p. 296.
*Clinical Experience with 95 to 98 per Cent Oxygen in Treatment of Abdominal Distention and Other Conditions. P. Congdon and A. M. Burgess, Providence, R. I.—p. 299.
Perianal Cryptic Tabs. E. T. Whitney and J. F. Keane, Boston.—p. 303.
Pediatrics. R. C. Eley, Boston.—p. 306.

Phenolphthalein Test in Gastrointestinal Disease.—In order to determine the rationale of the phenolphthalein test in the diagnosis of gastrointestinal disease, as suggested by Woldman, 203 patients were submitted to the test by Banks and Barron. Of these, fifty-two had intrinsic lesions of the gastrointestinal tract. The remaining 151 had a variety of conditions other than those of the gastrointestinal tract or no demonstrable pathologic lesion and served as controls. Only thirty-six positive tests were obtained in the group of fifty-two patients. Carcinoma of the stomach and intestine gave the highest proportion of positive results, whereas negative tests were found in two cases of esophageal carcinoma, possibly owing to the brief period of contact between the drug and the diseased area. Ulcers of the mouth and pharynx gave uniformly positive tests. Of twenty-two patients with gastric or duodenal ulcer, approximately one third yielded negative results. More detailed analysis of these failures revealed that gastric stasis or pyloric obstruction with fluid retention and possible precipitation of the drug might account for several, and one patient had an ulcer high in the cardia. No explanation was apparent in the remainder. There were three failures in four cases of chronic ulcerative colitis or amebic dysentery characterized by frequent liquid stools daily. Here again insufficient contact due to the hypermotility of the intestine may have been a factor. In the control subjects the test yielded 127 negative and twenty-four positive tests. The test was consistently negative in cases of hysteria, unexplained syncope, anorexia nervosa, diabetes and osseous disease. Positive tests were found especially in serious and advanced heart disease with pulmonary edema, paroxysmal nocturnal dyspnea, coronary occlusion, acute toxemia, infection and malignant metastasis. One must assume either that breaks in the mucous membrane of the alimentary canal frequently exist under such conditions or that the vitality of the cells is so impaired that the enteric membrane no longer acts as an efficient barrier to the drug. Several asthmatic patients also excreted significant amounts of free phenolphthalein in the urine. It is the authors' impression that the test may find its greatest field of usefulness among ambulatory patients, in whom the chance of obtaining false positive tests because of severe toxemia or far advanced systemic disease would be largely eliminated. In view of the rapid absorption from oral lesions which might obscure a more serious condition lower down, the patient should drink the test fluid through a straw, rinsing the mouth immediately and thoroughly with water without swallowing further. Excessive salivation should be noted and prevented from interfering with the test. In cases of suspected gastric disease, the test is best done after gastric lavage or gastric analysis in order to obviate retention and consequent excessive dilution of the test liquid. At times catheterization to obtain the urine specimens may be indicated, as in prostatic cases in watery diarrhea.

Oxygen for Abdominal Distention and Emphysema.—Congdon and Burgess used 95 to 98 per cent oxygen in the treatment of forty cases of abdominal distention and three cases of subcutaneous emphysema treated. Twenty-five of the patients with abdominal distention were strikingly benefited, the benefit in five was questionable and ten were uninfluenced. Of those with emphysema, all had satisfactory results. Following encephalography the routine use of the method has appeared to prevent severe headaches. It is in severe abdominal distention, such as that which is seen in certain infectious diseases, notably pneumonia, typhoid and peritonitis after abdominal operations, that the method is most useful and at times life saving. It should be considered an emergency measure when simpler means have failed.

New Jersey Medical Society Journal, Trenton

36: 473-522 (Aug.) 1939

Factors Determining Localization of Organ Tuberculosis. S. Berg, Newark.—p. 479.
Primary Bronchopulmonary Aspergillosis. A. J. Stolow, Glen Gardner.—p. 484.
Neurosurgical Aspects of Cranial Neuralgias: Trigeminal Neuralgia, Glossopharyngeal Neuralgia and Ménière's Syndrome. W. Ehrlich, Newark.—p. 486.
Perineal Repair: Choice of Operation. D. N. Barrows, New York.—p. 492.
Management of the Rheumatic Patient. J. G. Kaufman, Newark.—p. 496.
Toxemias of Pregnancy. A. J. Walscheid, Union City.—p. 500.
Clinical Manifestations and Management of Early Syphilis. G. D. Astrachan, New York.—p. 508.
Maternal Mortality Statistics 1938. A. W. Bingham, East Orange.—p. 510.

Pennsylvania Medical Journal, Harrisburg

42: 1297-1424 (Aug.) 1939

Gastrointestinal Manifestations of Urinary Disease and Urinary Manifestations of Gastrointestinal Disease. P. W. Brown and E. G. Wakefield, Rochester, Minn.—p. 1309.
Rationale of Cholecystectomy in Noncalculous Gallbladders. L. D. O'Donnell, Pittsburgh.—p. 1315.
Cancer. S. P. Reimann, Philadelphia.—p. 1319.
Treatment of Fractures of Hip. L. F. Bush, Danville.—p. 1325.
Physical Therapy in Otolaryngology. W. H. Schmidt, Philadelphia.—p. 1330.
Management of the Gallbladder Patient. M. E. Rehfuss, Philadelphia.—p. 1335.
*Vaccination During Pregnancy as Prophylaxis Against Puerperal Infections. J. B. Bernstine and G. W. Bland, Philadelphia.—p. 1340.

Vaccination for Puerperal Infections.—A second series of 177 pregnant women vaccinated against puerperal infections are the subject of the report by Bernstine and Bland. The article dealing with the first series of fifty-one pregnant women so vaccinated was abstracted in THE JOURNAL, March 21, 1936, page 1037. The vaccine consists of five strains of Streptococcus haemolyticus, eight of Streptococcus viridans, two of Staphylococcus aureus, two of Bacillus coli communis, four of Streptococcus nonhaemolyticus and ten of Staphylococcus albus. The respective percentages of these strains in the vaccine are 35, 15, 15, 15, 10 and 10. The patients (228) in both series were delivered with no fatalities. The puerperal morbidity was 5.4 per cent as compared to the morbidity of the nonvaccinated women, which was 19.2 per cent. Ninety male and eighty-two female children were born to the 177 vaccinated patients. There were three abortions and two stillbirths. In the entire group there were three abnormalities—hemangioma of the maxilla, supernumerary digits and left clubfoot. The vaccine was administered to pregnant women with various complications in addition to their pregnant state. These complications varied in type and severity, and yet not a single case was observed that presented an aggravation of the preexisting condition. The patients were not hand picked but represent a cross section of the average obstetric practice with its associated complications.

Public Health Reports, Washington, D. C.

54: 1509-1546 (Aug. 18) 1939

*Treatment of Induced Malaria in Negro Paretics with Mapharsen and Tryparsamide. M. D. Young and S. B. McLendon.—p. 1509.
Pulmonary Tumors in Mice: Parts VI, VII, VIII and IX. H. B. Andervont.—p. 1512.

Induced Malaria in Negroes with Dementia Paralytica.—According to Young and McLendon during the last year, at the South Carolina State Hospital, ten Negro dementia paralytica patients who had been infected for therapeutic purposes with quartan malaria were given mapharsen. Each patient received 0.04 Gm. of mapharsen intravenously weekly for a period of ten weeks. At the same time 0.02 Gm. of thiobismol was given. Subsequently, two of the ten patients received a course of tryparsamide. Twenty-two weeks after the completion of the mapharsen treatment, blood smears from all ten patients still showed parasites (Plasmodium malariae) although the patients showed no symptoms of the disease. To test the viability of the parasites, subinoculations were made from two of the mapharsen-treated persons to two uninfected subjects.

Typical symptomatic and parasitic infections with quartan malaria developed in both, which showed that the mapharsen had not affected the viability of the malaria parasites. Examinations were made of three quartan malaria patients who had received tryparsamide in antisyphilitic treatment. One year after the completion of the tryparsamide treatment two patients still harbored Plasmodium malariae in the blood stream. Another patient still had parasites nine months after treatment. Another group of eight patients was started on tryparsamide. Four patients completed the treatment and the malaria parasites were continually present. Treatment of the other four was interrupted after the fifth week, and all had shown malaria parasites continually. Subinoculation from one of this group resulted in a typical symptomatic and parasitic course of malaria, showing that the parasites were still viable. As these drugs relieved the symptoms without eradicating the infection, their use might inadvertently result in quartan malaria carriers being released and thus establish foci of infections of a type of malaria now rare in the United States.

54: 1547-1586 (Aug. 25) 1939

Natural Infection of Triatoma Gerstakeri with Trypanosoma Cruzi in Texas. A. Packchanian.—p. 1547.
Disabling Morbidity Among Industrial Workers, First Quarter of 1939. W. M. Gafafer.—p. 1554.
*Outbreak of Botulism in Tennessee Due to Type B Clostridium Botulinum. C. B. Tucker and H. Swanson.—p. 1556.

Botulism in Tennessee.—Tucker and Swanson report two cases of botulism, which are of particular interest because for the first time Clostridium botulinum toxin was demonstrated to be present in home-canned vegetables in Tennessee. Moreover, for the first time in Tennessee Clostridium botulinum, type B, was actually recovered. Twenty cases of botulism in Tennessee which occurred prior to 1939 are reviewed. Home-canned okra and possibly home-canned beans were the foods responsible for the two cases reported.

Wisconsin Medical Journal, Madison

38: 605-708 (Aug.) 1939

Use and Importance of Electrocardiography in Prognosis and Treatment of Diseases of Heart by the General Practitioner. W. Adams, Chicago.—p. 623.
Low Grade Occult Inflammatory and Neoplastic Diseases of Orbit. W. L. Benedict, Rochester, Minn.—p. 628.
The Asphyxiated Infant. H. A. Cunningham and A. B. Schwartz, Milwaukee.—p. 632.
*Evaluation of Therapy in Trigeminal Neuralgia: Results of Treatment with Typhoid Vaccine in Eighteen Cases. E. R. Schmidt, Madison, and J. M. Sullivan, Milwaukee.—p. 635.
Convalescent Serum in Contagious Diseases. J. A. Conner, Chicago.—p. 638.
Aberrant Gastric Mucosa in Rectum with Ulceration and Hemorrhage. G. H. Ewell and R. H. Jackson Sr., Madison.—p. 641.
Treatment of Prostatic Obstruction: Analysis of 300 Cases. W. G. Sexton, Marshfield.—p. 644.

Trigeminal Neuralgia.—In evaluating the results of hyperpyrexia treatments in trigeminal neuralgia, Schmidt and Sullivan chose typhoid vaccine because of its ease of administration and handling, treating eighteen patients. Injections at about biweekly intervals, starting with a dose of 10,000,000 killed organisms, were given intravenously, and the doses were stepped up by ten or twenty million each time until a good thermal reaction was obtained. Early in their series they learned that results could be obtained as readily with a mild fever response as with a high thermal reaction. The majority of their patients were hospitalized for their treatments, but several ambulatory patients were treated and no ill effects have been encountered. Of five patients more than 80 per cent relief was obtained and they were satisfied to control their residual tic with mild analgesics or Christian fortitude rather than submit to further therapy. Of five other patients, relief was complete and continuous. Four patients experienced complete relief for from two to four months and failed to respond to a second course of vaccine therapy, so that alcohol injections were necessary for the further control of the tics. Three patients obtained 50 per cent relief or less and needed alcohol injections to complete their treatment. Only one patient in the series failed to show some amelioration of symptoms following vaccine therapy; the sensory root of the trigeminal nerve was resected and complete relief ensued. Women showed a slightly better response than men to this form of treatment. Snake venom in a trial group proved unsuccessful in relieving pain of this type.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Australian and New Zealand J. Surgery, Sydney

9: 1-110 (July) 1939

Sir Kenelm Digby and His "Choice Receipts." K. F. Russell.—p. 3.
The George Adlington Syme Oration: Surgery in England in the Making. A. Webb-Johnson.—p. 10.
Early Symptomatology and Conservative Treatment of Bladder Neck Obstructions. R. J. Silverton.—p. 31.
Some Points in Treatment of Retinal Detachment. J. R. Anderson. —p. 35.
Sinusitis. G. C. Scantlebury.—p. 46.
Mechanical Principles in Causation and Treatment of Disease: Lecture I. Fay Maclure.—p. 66.

British Journal of Medical Psychology, London

18: 105-284 (July) 1939

Psychologic Observations on Hematemesis. A. T. M. Wilson.—p. 112.
Symbolic Significance of Glass and Its Relation to Diseases of Eye. W. S. Inman.—p. 122.
Case of a Middle-Aged Embezzler. D. Forsyth.—p. 141.
Conception of Dread of Strength of Instincts. N. J. Symons.—p. 154.
Is Aggression an Irreducible Factor? W. R. D. Fairbairn.—p. 163.
Aggression. A. W. Wolters.—p. 171.
Aggression in Early Childhood. Karin Stephen.—p. 178.
Sin, Sex and Sickness in Saulteaux Belief. A. I. Hallowell.—p. 191.
Analytic Observations on Scala Perfectionis of Mystics. P. Hopkins. —p. 198.
Some Interpretations of Painting Called "Abstraction." R. W. Pickford. —p. 219.
Studies on Psychopathology of Compulsive Wandering: Preliminary Report. E. Stengel.—p. 250.

British Journal of Surgery, Bristol

27: 1-208 (July) 1939

*Increased and Decreased Density of Bone, with Special Reference to Fibrosis of Marrow. H. A. T. Fairbank.—p. 1.
Improved Spinal Analgesia. G. Macpherson.—p. 34.
Treatment of Empyema Thoracis by High Negative-Pressure Drainage. E. R. Trethewie.—p. 58.
Veritol: Blood Pressure Stimulant for Use During and After Operations. H. Dodd and G. Merton.—p. 78.
Spontaneous Rupture of Gallbladder with Massive Intraperitoneal Hemorrhage. R. Mailer.—p. 91.
*Vascular Anomalies of Upper Limbs Associated with Cervical Ribs: Report of Case and Review of Literature. R. M. Hill.—p. 100.
Vascular Complications of Cervical Ribs and First Thoracic Rib Abnormalities. K. C. Eden.—p. 111.
Sublingual Dermoids. H. Bailey.—p. 140.
Colocolic Intussusception Due to Dysenteric Ulceration: Case. F. M. Collins.—p. 144.
Spondylolisthesis. W. Kark.—p. 149.
Support of Shoulder: New Abduction Splint. W. A. Cochrane.—p. 151.
Successful Implantation of Cut Pancreatic Duct into Duodenum. D. J. Harries.—p. 154.
Congenital Absence of Right Femur. K. Manohar.—p. 158.
Congenital Defect of Shaft of Femur. H. H. Langston.—p. 162.
*Gallstones and Cancer: Problem of Etiology, with Special Reference to Role of Irritation. H. Burrows.—p. 166.

Density of Bone and Fibrosis of Marrow.—Fairbank lists the principal conditions in which more or less severe generalized osteoporosis, or want of density of the skeleton as a whole, is found: osteogenesis imperfecta, osteogenesis imperfecta cystica, infantile scurvy, rickets, osteomalacia, celiac rickets, idiopathic steatorrhea in adults, renal rickets, renal glycosuria in adults, hyperparathyroidism, osseous dysplasia following icterus neonatorum, thyrotoxic osteoporosis in adults, osteoporosis due to pituitary basophilism, senile osteoporosis and generalized osteoporosis from prolonged recumbency and cachexia. Alterations in the density of the bones are in the direction either of osteoporosis or of osteopetrosis. These two changes may be present in a single case, even in a single bone, there being a tendency in many cases for an initial osteoporosis to be replaced by increased density. The author suggests that marble bones with a limited distribution, generally known as melorheostosis, is really a particular type of diffuse fibrosis of bone. Some evidence is presented that generalized osteopetrosis, or Albers-Schönberg's disease, may be similar. The occasional association of cutaneous lesions, usually of a fibrotic nature, with multiple bone changes is commented on. In the etiology of the more obscure disorders it is possible that the parathyroids may be responsible, partly or entirely, for such diverse conditions as renal rickets and marble bones, as well as for the fibrocystic osseous changes of hyperparathyroidism.

Vascular Anomalies of Upper Limbs and Cervical Ribs.—Hill cites a case of bilateral cervical ribs accompanied only by vasomotor disturbances of the hands of the acrocyanosis

type in which removal of a rib and the fibromuscular band relieved pain, diminished swelling and improved the color of the hand on the corresponding side. Other anatomic variations are worthy of consideration in cases of vascular disorders of the upper extremities and, with rational indications, exploratory operation on this region would be warranted.

Gallstones and Cancer.—In order to prove further that chronic irritation is not the cause of cancer, Burrows placed gallstones and other foreign bodies in the gallbladders of fifty guinea pigs, which subsequently lived for periods varying from nine to 359 weeks. In no instance did cancer of the gallbladder develop. These results are regarded as supporting the view that experimentally chronic irritation alone is not the cause of cancer.

British Medical Journal, London

2: 265-320 (Aug. 5) 1939

Present Position of Chemotherapy by Drugs of Sulfanilamide Group: Bacteriologic and Experimental Aspect. C. H. Browning.—p. 265.
Pharmacology of Sulfanilamide Group of Drugs. G. A. H. Buttle.—p. 269.
Achlorhydric Hypochromic Anemia Associated with Peripheral Neuritis: Report of Two Cases. C. Worster-Drought and J. Shafar.—p. 273.
*Rheumatism and Climate. L. Hill.—p. 276.
*Hepatic Insufficiency in Scarlet Fever. R. W. Carslaw.—p. 278.

Rheumatism and Climate.—The literature contains many speculations about the influence on rheumatism of cold and damp, cyclonic disturbances, the electrical state of the atmosphere and the like but Hill states that the evidence shows that it is conditions produced by dirty, artificially heated and poorly ventilated houses and density of population which cause decay of teeth, catarrhal infections and rheumatic troubles. The ill effects of these conditions are intensified by a diet in which the protective foods are deficient. Women suffer from rheumatic troubles more than men, because the latter by going to work change to better conditions. The fear of cold intensifies the ill effects of the indoor environment.

Hepatic Insufficiency in Scarlet Fever.—Carslaw studied 219 cases of scarlet fever in the hope of detecting some warning in those cases in which nephritis developed later. He noticed that there was a general fall in the urea factor throughout the first three weeks of the illness and that the figure was at its lowest at the critical period—that is, at the period when nephritis most commonly occurs; at the end of the third week. The urea factor was found to be lower in the nephritic than in the non-nephritic cases. Therefore the author proposes the determination of the specific gravity of the urine and the percentage of urinary urea as a clinical test of hepatic function. The urea factor can be of value in the prognosis of scarlet fever.

2: 321-382 (Aug. 12) 1939

Medical Treatment of Peptic Ulcer and Its Complications. E. Meulengracht.—p. 321.
Food Conservation in Relation to National Food Supply. J. Barcroft.—p. 324.
Commoner Types of Supersensitiveness and Their Management. J. G. Graham and J. D. O. Kerr.—p. 327.
*Nicotinic Acid in Treatment of Delirium Tremens. F. Mainzer and M. Krause.—p. 331.
*Hematemesis and Melena: Observations on Salt and Water Requirements. F. A. Jones.—p. 332.
Series of 200 Cases of Esophagoscopy for Foreign Bodies. F. G. Wrigley.—p. 334.

Nicotinic Acid for Delirium Tremens.—Mainzer and Krause state that in a chronic whisky addict an attack of delirium tremens (recurrence) associated with severe gastrointestinal manifestations and acute stomatitis was made to disappear within twelve hours by the administration of 0.6 Gm. of nicotinic acid. Previous to this, thiamin chloride had been given in large doses without any perceptible result. The prompt response to nicotinic acid favors the assumption that lack of this vitamin is an important factor in the development of delirium tremens.

Salt and Water Requirements in Hematemesis and Melena.—Jones examined the postmortem records of seven cases of hematemesis and melena that have ended fatally after hemorrhage had ceased, that is delayed death. An analysis indicates that severe dehydration was the common factor in these cases and that symptoms were masked by the liberal administration of opiates. The dehydration was due partly to insufficient fluid intake and partly to a forced diuresis. The latter was probably the result of a much increased excretion of urea, presumably derived from the digestion of blood in the intestine. Such patients should receive enough fluid to meet the normal requirements of the kidneys, skin and lungs, and to replace any abnormal fluid loss. In addition, it is recommended that they should be given 10 Gm. of sodium chloride daily during the first few days after the hemorrhage.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

46: 645-812 (Aug.) 1939

*Maternal Age and Parity in Placenta Praevia. L. S. Penrose.—p. 645.
Studies in Vaginal Fluid. N. Lissimore and D. W. Currie.—p. 673.
*Pathology of Hyperemesis and Vomiting of Late Pregnancy. H. L. Sheehan.—p. 685.
*Some Problems Concerning Etiology and Treatment of Hyperemesis Gravidarum. E. Bandstrup.—p. 700.
Vaginal Implantations in Uterine Carcinoma. G. I. Strachan.—p. 711.
Glycogen Content of Fallopian Tubes During Menstrual Cycle and During Pregnancy. K. Joël.—p. 721.
Lipoid Content of Fallopian Tubes During Menstrual Cycle and During Pregnancy. K. Joël.—p. 731.
Further Investigations on Induction of Uterine Hemorrhage by Means of Progesterone: Second Report. B. Zondek and S. Rozin.—p. 736.
Effects of Emotional Stress on Contractions of Human Uterus: Preliminary Report. E. M. Robertson.—p. 741.
Pregnancy in Uterus Containing Multiple Fibromyomas: Case. H. E. Murray.—p. 748.
Radium Treatment of Menopausal Hemorrhage, Followed by Carcinoma of Body of Uterus Three Years Later. S. G. Luker.—p. 753.
Two Unusual Cases of Ectopic Pregnancy. D. F. Anderson.—p 756.

Maternal Age and Parity in Placenta Praevia.—Penrose studied the maternal histories of seventy-two cases of placenta praevia. The material collected, together with some additional data, has been analyzed in such a manner as to obtain information about the etiologic importance of maternal age and multiparity. The data suggest that increasing maternal age is a significant factor in producing the central type, though multiparity can be the chief cause in some marginal and lateral cases of placenta praevia. The expected mean maternal age at normal births is seen to be 29.1 years; the observed mean maternal age in all the cases of placenta praevia is 31.86 years. The difference between these two means is of highly significant value in the statistical sense: it is nearly four times the standard error, which is ± 0.71 years. With regard to multiparity the mean birth rank for placenta praevia was 3.55. This value was higher than that of expected normal births, 2.58. The difference of almost one rank between observed and expected values is statistically significant and is nearly as significant as the maternal age difference.

Pathology of Hyperemesis of Late Pregnancy.—In the course of routine work it became evident to Sheehan that the textbook descriptions of the pathologic lesions of hyperemesis or late vomiting were somewhat misleading. A study was made of the thirty-two patients who died and were examined post mortem within the last ten years, adequate histologic material having been preserved. The thirty-two patients died as a direct result of hyperemesis or of vomiting of late pregnancy, either before or within twenty-four hours after delivery. The author points out that the pathologic lesions found in these cases resulted from vomiting and an inadequate diet. There is evidence of loss of weight, but the body is usually not greatly emaciated. The heart is atrophied; the severity of this change is proportionate to the duration of the vomiting. The kidneys frequently show fat in the mitochondrial zone of the first convoluted tubules; this is dependent on acidosis during the last few days before death and is not present if adequate amounts of dextrose are administered during this time. The liver sometimes shows a fatty infiltration which may be centrilobular or, less commonly, periportal. This appears to be due to mobilization of body fat consequent on starvation. The brain, in patients who develop the terminal cerebral syndrome, shows the lesions of Wernicke's encephalopathy. Patients who die as a result of vomiting of late pregnancy do not have atrophy of the heart but otherwise show the same changes as in hyperemesis. In addition, evidence of the etiologic factor, such as pyelitis or hypertensive toxemia, is usually present. Patients who die in the early puerperium after these conditions may continue to show the same lesions that are found in the course of the disease. However, there may be additional changes due to the anesthetic or to puerperal sepsis. From the present investigation and from a study of the literature, it seems probable to the author

that all the cases of hyperemesis or late vomiting that have been reported as showing centrilobular necrosis of the liver were really cases of delayed chloroform poisoning. Certain of the other changes reported in the literature, such as necrosis of renal tubules, are only artefacts produced by postmortem autolysis. That the liver or kidneys may show any grade of the development of degeneration or necrosis out of the fatty change does not rest on any satisfactory foundation.

Etiology and Treatment of Hyperemesis Gravidarum.—In discussing the pathogenesis of hyperemesis, Bandstrup sums up present knowledge by stating that, owing to some unknown cause, the woman begins to vomit. The further course of the illness may depend to a large extent on psychic factors. A state of inanition develops, of which want of glycogen in the liver is probably the most serious feature even though the want of salt, water and vitamins, together with the development of acidosis, is an important factor. A specific toxin of hyperemesis has never been demonstrated as a cause of the necrotic changes in the liver and other organs, and it is not inconceivable that these changes may develop as a result of the inanition under the special endocrine conditions present in pregnancy. In keeping with his view of the pathogenesis of this disease, his treatment consists of psychic, sedative and restorative therapy; if this is found inadequate pregnancy has to be interrupted. The psychic therapy consists of a firm suggestive management on the part of the physician and admission to a hospital, possibly with isolation of the patient. Sedatives, such as bromides and barbituric acid, have a calming effect on the mind of the patient and lower the irritability of the center for vomiting. The restorative therapy consists in the administration of dextrose, insulin, sodium chloride, water and vitamins. The future will show whether adrenal cortex extract is to be established as an effective remedy in the restorative therapy. If conservative treatment on these principles fails to lead to recovery, it may be necessary to induce abortion. Seven symptoms are considered as indications for interruption of pregnancy in hyperemesis. These symptoms include elevation of the temperature above 100.6 F. or persistent subfebrile temperature, persistent increase in the pulse rate over 100 a minute, jaundice, albuminuria, polyneuritis, ocular symptoms and psychotic changes. From a study of forty fatal cases of hyperemesis, twenty-five presented only one or more of the foregoing serious symptoms for more than one week prior to interruption of pregnancy or death. So the mere presence of one serious symptom has to be taken as a warning. All the patients were admitted to the hospital, even though a few of them did not enter the hospital till immediately before death. The treatment, as a rule, consisted of restorative and sedative treatment, besides therapeutic abortion in thirty of the forty cases.

Journal of Physiology, London

96: 109-232 (July) 1939. Partial Index

Effect of Forced Breathing on Motor Chronaxia. B. Dijkstra and M. N. J. Dirken.—p. 109.
Effect of Clotting and of Addition of Histamine on Its Distribution in Blood. G. V. Anrep, G. S. Barsoum, M. Talaat and E. Wieninger.—p. 130.
Release of Histamine by Isolated Smooth Muscles. N. Ambache and G. S. Barsoum.—p. 139.
Rotatory Movements of Apex of Exposed Mammalian Heart. K. J. Franklin.—p. 164.
Changes in Elasticity of Mammalian Muscle Undergoing Rigor Mortis. E. C. B. Smith.—p. 176.
Nerve Excitation by High Frequency Alternating Current. B. Katz.—p. 202.

Lancet, London

2: 297-352 (Aug. 5) 1939

Visceral Neuroses. J. A. Ryle.—p. 297.
*Encephalomyelitis Following Administration of Sulfanilamide. J. H. Fisher, with note on histologic findings by J. R. Gilmour.—p. 301.
*Local Tissue Anoxia and Its Treatment, with Special Reference to Rheumatic Myocarditis. E. P. Poulton.—p. 305.
Tests for Athletic Efficiency. A. Abrahams.—p. 309.
Biologic Effects of Synthetic Estrogen Hexestrol 4: 4'Dihydroxy-γ: δ-Diphenyl-n-Hexane. N. R. Campbell, E. C. Dodds, W. Lawson and R. L. Noble.—p. 312.

Encephalomyelitis After Sulfanilamide.—Fisher cites two cases in which symptoms of encephalomyelitis appeared after the administration of small quantities of sulfanilamide. The total doses taken were small (14 and 18 Gm., respectively) and if the drug was responsible the patients must have been more than ordinarily susceptible to it. There is evidence in patients suffering from certain illnesses—including acute rheumatic fever and lupus erythematosus—in which toxic manifestations after taking sulfanilamide are especially likely to develop. Vascular changes are seen in some cases of encephalomyelitis and their relation to the demyelinating lesions is discussed.

Tissue Anoxia and Its Treatment.—Poulton calls attention to the fact that the importance of local tissue anoxia and its treatment with oxygen has not been recognized heretofore, except that success has been claimed for oxygen therapy in varicose ulcer with local edema, poisoning with alcohol and coronary thrombosis. The inhalation of a high percentage of oxygen may have a wide application in treatment; its use in cerebral hemorrhage, thrombosis and embolism is suggested. The evidence that there is local anoxia in rheumatic myocarditis is a changed lactic acid metabolism and clinical improvement on treating patients with oxygen, resulting in a fall of temperature and pulse rate, alteration of murmurs, diminution in the size of the heart and electrocardiographic changes. Oxygen treatment in early cases appears to be of permanent benefit, but further observations are required. In seventeen of twenty-six rheumatic patients (fifteen in their first attack), treated with oxygen for periods varying from about a week up to eighty-two days clinical improvement was noticed. The patients felt better; they were more active and ate more and cyanosis disappeared; one could "breathe better." The improvement was most obvious of extremely ill patients, such as one with pericarditis, nephritis and purpura, who was so ill that oxygen had probably saved his life, another who had made but little recovery from a pericarditis and one with pneumonia and pericarditis. All these were children. Improvement was noticed whether the acute rheumatism was a first attack or accompanied by an old standing cardiac lesion. Adult patients also felt better. In eight cases there was no clear subjective improvement. A patient who had an enlarged cardiac shadow which indicated pericarditis did well in the tent, but the value of prolonged treatment was not realized as he was taken out of it after two days. Two and a half months later he was put in the tent for thirty-five days; there was massive edema, scanty urine and an enlarged liver; he died soon after being taken out of the tent. Hence oxygen should not be left till the last stages of rheumatic heart disease. A control series of sixteen cases observed over the same period tells a different story. In two cases in which there were systolic murmurs the cardiac condition cleared up in less than a month in one and in eleven weeks in the other. Another patient began with nodal rhythm, ventricular escape, and presystolic and systolic murmurs; after two months there were a systolic murmur and good first sound, and the pulmonary second sound reduplicated on inspiration. These three results are good. The results in the remaining thirteen are poor: in two cases soft systolic murmurs appeared and have persisted for nearly nine months in one and more than two months in the other, in two there were loud systolic murmurs and weak first sounds, in five middiastolic murmurs or their equivalents remained, in two there remained aortic diastolic murmurs and in two there was tachycardia, with a late blowing systolic in one.

2: 353-406 (Aug. 12) 1939

Visceral Neuroses. J. A. Ryle.—p. 353.
*Response of Nutritional Macrocytic Anemia to Anahemin. H. Foy and Athena Kondi.—p. 360.
*Treatment of Epilepsy with Epanutin. D. Blair, K. C. Bailey and J. S. McGregor.—p. 363.
Epanutin in Epilepsy. J. P. Steel and E. S. Smith.—p. 367.
Idiosyncrasy to Acriflavine: Failure to Transmit by Blood Transfusion and Reactions to Allied Drugs. W. A. Young.—p. 369.
Acute Pancreatitis Caused by Barleycorn. F. Forty.—p. 370.

Anahemin for Nutritional Macrocytic Anemia.—Foy and Kondi find that the nutritional macrocytic anemia seen in Macedonia responds as readily to anahemin as to less purified liver extracts. This response is in contrast to the cases treated in India and suggests that the Macedonian cases differ from those in India, in which a high indirect van den Bergh reaction is rare, glossitis is common and the highly purified liver preparations are inactive. Such responses to these highly purified extracts make it appear unlikely that the filtrate factor of Edgar and Macrae is the active one in the cure of nutritional macrocytic anemia in Macedonia. Further, work done with the filtrate-factor concentrate shows that this, administered alone, is inactive

even when given in large doses. It is not impossible that the response to anahemin is quantitative and related to the liver content. It is active in 2 cc. doses and will probably be found active in smaller doses. Although the quantitative aspect is important, it is probable that the qualitative aspect also enters into the picture, for work now in progress seems to show that large amounts of filtrate combined with small amounts of anahemin are extremely active. This work suggests that the conclusions drawn by Wills and Evans (1938) and Napier (1939) do not apply to the nutritional macrocytic anemia of Macedonia as typical responses to anahemin were obtained. Further, the suggestion that there is some active principle present in the filtrate factor is not borne out by work with filtrate-factor concentrates, which do not produce any effect on the anemias in Macedonia. Such observations appear to bring back the position to that originally postulated by Castle.

Sodium Diphenyl Hydantoinate for Epilepsy.—Blair and his colleagues used sodium diphenyl hydantoinate in the treatment of fifty-three male and twenty-two female epileptic patients having grand mal attacks. Fifty-eight of the patients have been treated continuously for from two to six months, in eleven it was necessary to terminate treatment and six recently admitted patients have not yet received two months of treatment. The authors' results confirm those of Merritt and Putnam, that the drug is a strong anticonvulsant, its action sometimes being dramatic, but a weak depressant. Apart from the reduction in the number of fits, the drug was beneficial to the mental condition of many patients. In patients having chronic psychotic epilepsy there was little room for intellectual improvement, but a beneficial modification of the typical epileptic temperament was often observed. Most of the patients improved mentally, being more cheerful and congenial, less quarrelsome and complaining and more easily managed and occupied. In some cases the effect has been remarkable. Detrimental changes may, however, develop in association with toxic effects, and whenever a patient's mental condition appears worse, chronic poisoning should be suspected. Many patients exhibited toxic nervous symptoms, but a rash developed in only one. These toxic symptoms often developed after an increase in the dose.

2: 407-462 (Aug. 19) 1939

Visceral Neuroses. J. A. Ryle.—p. 407.
Transplantation of Ureters into Rectum by Mirotvortzeff's Method. S. P. Shilovtzeff.—p. 412.
Analysis of Normal P Wave. A. Hill.—p. 415.
*Malnutrition and Debility in Puerperal Psychoses. Norah A. Haworth. —p. 417.
*After-Effects of Exposure of Men to Carbon Dioxide. W. Alexander, P. Duff, J. B. S. Haldane, G. Ives and D. Renton.—p. 419.
Antitumorigenic Action of Progesterone. A. Lipschütz, R. Murillo and L. Vargas.—p. 420.
Amyloidosis Complicating Still's Disease. A. H. Imrie and Anne C. Aitkenhead.—p. 421.
Antipellagric Properties of Quinolinic Acid. R. W. Vilter and T. D. Spies.—p. 423.
Ayerza's Syndrome: Case. J. A. Brocklebank.—p. 423.

Malnutrition and Debility in Puerperal Psychoses.—It is generally accepted that there is no specific form of mental disorder associated with childbirth and that when mental illness begins during pregnancy, the puerperium or lactation, childbirth may act as a precipitating factor. However, Haworth asserts that during childbirth there are certain points worthy of consideration. First the mental illness of pregnancy is often associated with some other contributory cause. Many of these women have already had one or more confinements and many of them pass normally through later confinements. This suggests that some other factor of a temporary nature is involved. The most important thing in the study of these contributory causes is the recognition of those which might be eliminated. Some, such as hereditary predisposition and lifelong nervous instability, cannot be removed, but a knowledge of their presence in the early days of pregnancy should suggest a special effort to build up the general powers of resistance and to eliminate additional preventable factors. Of the preventable contributory causes the author suggests that the two most important are (1) malnutrition and general debility and (2) stress and anxiety, emotional or environmental. The admittance of 117 cases of mental illness arising in connection with childbirth to Severalls Mental Hospital over a period of fifteen years shows how common these factors are. All but six patients were admitted during the late months of pregnancy, during the puerperium or during lactation. In every case this was the first occasion on which the patient had been admitted to a mental hospital; seventy-two of the patients recovered, sixty had already had one or more normal confinements and twelve have had one or more confinements since their discharge from the hospital without developing any mental symptoms. Fifty-four of the sixty-eight women weighed on admission were below normal weight, twenty-eight being more than 14 pounds (6.4 Kg.) underweight. In every case except one, recovery was associated with an increase in weight. Only twenty-eight of the 117 patients were found to be in satisfactory general health when admitted to the hospital, none of these showing any sign of physical disorder. The majority were suffering from minor physical ailments, eighty had dirty, furred tongues and were and had been suffering from constipation, sixty had carious teeth or pyorrhea or both, thirty-two were suffering from anemia and, as has been shown, many were poorly nourished and underweight. A history taken in the early days of pregnancy would have shown that thirty-six of these patients belonged to families in which a near relative had suffered from insanity, epilepsy or alcoholism, twenty-nine had at some period in their life already shown signs of nervous instability, while twenty-two had undergone long and severe stress. Therefore it seems that many instances of puerperal psychosis could probably be prevented by attention to nutrition, general health and environmental conditions early in pregnancy.

After-Effects of Exposure to Carbon Dioxide.—According to Alexander and his co-workers, after breathing air with a partial pressure of more than 6 per cent of carbon dioxide for an hour or longer, five of six men experienced headache on breathing oxygen and two of them vomited. The bearing of this observation on escape from submarines is discussed and it is suggested that in such circumstances men should breathe air or oxygen for thirty minutes or more before attempting to use the escape apparatus, because under these circumstances vomiting would prove fatal and calmness and some physical exertion are required.

Medical Journal of Australia, Sydney

2: 193-234 (Aug. 5) 1939

*Study of Heterologous Antibodies in Serum of Poliomyelitis Patients. F. M. Burnet, Mavis Freeman, A. V. Jackson and Dora Lush.—p. 198.
Some Common Problems in Everyday Prescribing. B. L. Stanton.—p. 206.
Note on Occurrence of Cimex Hemiptera in Nauru, Central Pacific. L. A. Windsor-McLean.—p. 211.

2: 235-266 (Aug. 12) 1939

Chemical Estimation of Vitamin C, with Analyses Made on Some Queensland Products. E. L. Leggett and Kathleen W. Robinson.—p. 241.
Public Health: Health Work in Country Centers. C. T. Piper.—p. 244.

Heterologous Antibodies in Poliomyelitis Serum.—Burnet and his associates postulated that poliomyelitis in human beings is strictly confined to the central nervous system and that extremely little antigen reaches any part of the antibody-producing mechanism. If this is so, poliomyelitis antibody must be either the response to another antigen having determinant groups in common with poliomyelitis virus or a change in the serum globulin content, associated with increasing age or increasing experience, or both, of a variety of antigenic stimuli. To come to a decision between these alternatives, they investigated a series of samples of serum from seventy patients with poliomyelitis for their content of four antibodies in addition to poliomyelitis antibody: diphtheria antitoxin, herpes simplex virus, swine influenza antibody, which was included because of its curious behavior in relation to age (it appears only in individuals more than 10 years of age), and staphylococcus α antitoxin. The results have been analyzed according to age and social environment and compared with those from control groups. There is no different proportion of any of the heterologus antibodies in these specimens of serum than would be found in a comparable group of normal serum specimens. Herpes simplex antibody and diphtheria antitoxin are both much more frequently found in children from crowded industrial suburbs than in those from better class areas. In the industrial areas herpes infection is contracted before the age of 2 years, while diphtheria antitoxin appears as a rule only after the child has begun to attend school.

There is no association between the frequency of swine influenza antibody or staphylococcus antitoxin in serum and the nature of the social environment. There is a significant correlation between the presence of poliomyelitis antibody and diphtheria antitoxin in young children from industrial suburbs; this suggests that the two antibodies are acquired at about the same age and under similar environmental conditions.

Practitioner, London

143: 129-236 (Aug.) 1939

Venereal Diseases and the General Practitioner. L. W. Harrison.—p. 129.
Treatment of Early Syphilis. R. Lees.—p. 134.
Treatment of Late Syphilis. T. Anwyl-Davies.—p. 146.
Treatment of Gonorrhea in the Female and of Vulvovaginitis in Little Girls. Gladys M. Sandes.—p. 157.
Treatment of Gonorrhea and Chancroid in the Male. H. M. Hanschell.—p. 165.
Treatment of Lymphopathia Venereum. H. S. Stannus.—p. 172.
Medicolegal Aspects of Venereal Disease. D. H. Kitchin.—p. 177.
Sterility in the Female. H. Taylor.—p. 185.
The General Practitioner and Psychoanalysis. J. Rickman.—p. 192.
Abdominal Pain in Young Children. V. Smallpeice.—p. 199.
Use and Abuse of Local Applications in Treatment of Skin Disease. E. W. P. Thomas.—p. 209.
Modern Therapeutics: II. Therapeutics of Iron. J. C. Hawksley.—p. 215.

South African Medical Journal, Cape Town

13: 535-586 (Aug. 12) 1939

History of Medicine. T. P. Oates.—p. 543.
Psychologic Factor in Disease: I. The Physician. C. D. Brink.—p. 550.
Id.: II. The Surgeon. J. A. Douglas.—p. 559.
Id.: III. The Psychiatrist's Point of View. W. Russell.—p. 562.
Id.: IV. The General Practitioner's Point of View. B. Walker.—p. 566.

Tubercle, London

20: 445-484 (July) 1939

Tuberculosis of Chest Wall. N. R. Barrett.—p. 445.
Apical Origin of Phthisis. S. Puder.—p. 460.
Observation on Healing of Tuberculous Cavities: Case Report and Comparison. G. A. M. Hall.—p. 468.

Tohoku Journal of Experimental Medicine, Sendai

36: 103-298 (July) 1939. Partial Index

Elimination of Sodium Chloride by Isolated Kidney (Normal or Diseased) in Perfusion with Hypotonic Solution of Sodium Chloride. M. Izumida.—p. 103.
Action of Berberine on Circulation. S. Suzuki.—p. 134.
Action of Arginase of Digestive Juices and of Pancreas. M. Kaiju.—p. 153.
Formation of Glycogen from Fats, Particularly Fatty Acids, Under Action of Epinephrine. K. Sanzyo.—p. 159.
Action of Vitamin C and of Related Substances on Glycogen Content. K. Terada.—p. 180.
*Acetone Content of Urine in Pulmonary Tuberculosis. K. Yamazaki.—p. 236.

Acetone of Urine in Pulmonary Tuberculosis.—Yamazaki decided to investigate the disturbances in the carbohydrate and fat metabolism of patients with pulmonary tuberculosis. He determined the elimination of acetone in the urine and compared it with that of healthy persons; he also studied the changes in the acetone content of the urine following tolerance tests with fat. The studies were made on 101 patients with pulmonary tuberculosis and on six healthy persons. He found that with healthy persons the urinary elimination of acetone averages 12 mg. daily. In cases of pulmonary tuberculosis it was higher, the daily average being 16.87 mg. On the whole, the acetone value was the higher, the more severe was the tuberculous process; that is, there was a parallelism between the type and stage of the disease and the urinary elimination of acetone. A comparison of the acetone values in the cases in which a diet with a high fat content was administered with those in cases in which such a diet was not given disclosed higher values in the first group. In cases in which glycosuria developed following the intake of large quantities of fat the acetone values were extremely high. Fat tolerance tests of healthy persons increased the acetone content of the urine on the average by 12.7 per cent; fat tolerance tests of patients with pulmonary tuberculosis and glycosuria produced an increase of 34.2 per cent. The author further shows that in cases of pulmonary tuberculosis the increase in the acetone content goes parallel with the height of the temperature and with the sedimentation speed of the erythrocytes.

Bruxelles-Médical, Brussels

19: 1235-1265 (Aug. 6) 1939

*Management of Labor and Prognosis for Child in Breech Presentation in Old Primiparas. J. Snoeck and R. Canon.—p. 1235.

19: 1266-1296 (Aug. 13) 1939

Cutaneous Immunizations in Eczema. Gougerot.—p. 1266.
*Management of Labor and Prognosis for Child in Breech Presentation in old Primiparas. J. Snoeck and R. Canon.—p. 1272.

Breech Presentation in Old Primiparas.—Snoeck and Canon show that the opinions regarding the prognosis of breech presentation in old primiparas and regarding the management of such cases differ greatly. They reexamined this problem on the basis of observations made in the years 1927 to 1938 at the maternity clinic of the University of Brussels. They present two series of eleven cases each. In one group of eleven cases the so-called classic methods were employed and the results for the fetuses were disastrous, the fetal mortality being seven. In the second series of eleven cases of breech presentation in old primiparas, the method of treatment was the low cesarean operation. In all these cases mother and child were entirely well when they were discharged from the clinic. On the basis of the comparison of the results obtained in these two series of cases, the authors conclude that the low cesarean operation is indicated in "dystocic" breech presentation of primiparas over 30 years of age. They list the conditions which signify "dystocic" breech presentation in an old primipara and which indicate cesarean operation as follows: (1) all breech presentations combined with narrow pelvis in which the true conjugate diameter measures less than 10.5 cm. so far as the presentation remains mobile within the limits of time specified later; (2) all breech presentations, whatever the true conjugate diameter may measure, which do not become engaged during the first ten to fifteen hours of labor, and this without taking account of the time of rupture of the bag of waters; (3) all breech presentations which are engaged before this lapse of time and in which the progression is slow or null in spite of two or three hours of good uterine contractions; (4) all breech presentations with anomalies of the uterine contractility or of the dilatation of the cervix, when these do not yield rapidly to energetic medical treatment. The authors think that all old primiparas should be delivered in an obstetric clinic. Regarding the technic of the treatment, they say that the low cesarean operation must be entirely segmental and not corporeal or corporeosegmental. They think that the transverse section of the muscular layer of the inferior segment is the only technic which guarantees the integrity of the body of the uterus in case of further tearing of the surgical incision.

Presse Médicale, Paris

47: 1261-1276 (Aug. 19) 1939

Amebiasis Not Recognized in France. M. Chiray and P. Chène.—p. 1261.
*Covered Perforation of Gastric and Duodenal Ulcer. H. Gjankovic.—p. 1263.

Covered Perforation of Gastric Ulcer.—Following a review of the literature on closed perforations of gastric and duodenal ulcers, Gjankovic discusses the clinical aspects of these types of perforations and gives rules regarding their treatment. In the second part of the paper he describes his personal observations. Among 109 cases of perforated gastroduodenal ulcers treated by him he encountered thirteen perforations that were covered (11.92 per cent). All except one of these covered perforations concerned duodenal ulcers, which indicates that covered perforations are much more frequent in duodenal than in gastric ulcers, even if the higher incidence of duodenal ulcers (sixty-nine of the 109) is taken into consideration. The author thinks that the prognosis of covered perforations is generally favorable but is doubtful until definite cure is established. Although spontaneous cure is possible, surgical treatment is indicated in all cases. If the perforation is recent it is necessary to operate immediately, except that the indication should be ruled by the clinical syndrome, the stage of the disease and the condition of the patient. Of the various surgical methods the resection is always indicated in the covered perforation of gastric and duodenal ulcer if there is no general contraindication. If on the other hand there is one, it is necessary to limit the operation, according to the nature of the contraindication, to a suture (if this is practical) with primary suture of the abdominal

wall. Conservative therapy is permitted only in a clinic, where permanent and competent control is possible. The circumscribed secondary abscesses with localized peritonitis should be opened and drained immediately under strictly aseptic conditions. The sutures of the covered perforations of the stomach and duodenum as well as anterior or posterior gastro-entero-anastomosis give the best permanent results in 75 per cent of the cases. The same results can be obtained by resection. The latter has advantages, because it readily and probably forever excludes late complications which may develop subsequently with the conservative operations. Therefore resection is advisable in all cases of covered perforation except for certain contraindications.

Giornale di Clinica Medica, Parma

20: 1023-1126 (Aug. 10) 1939. Partial Index

*Function of Bone Marrow in Nephritis. B. Nolli.—p. 1023.
Tabes with Clinicohumoral Dissociation: Histopathologic Study of Case. G. Fattovich.—p. 1050.
Calcification of Nucleus Pulposus: Cases. L. Pinelli.—p. 1073.

Bone Marrow in Nephritis.—Nolli says that early in the development of nephritis a myelopathy develops which causes nephritic anemia. The author studied the functions of the bone marrow in eighteen cases of nephritis of various types and at different evolutional stages. The observations were made on medullary blood which was taken by sternal puncture. The author found that the changes of the myelogram, of the leuko-erythropoietic ratio in the myelogram and of the curves of maturation of the stem blood cells of both the erythroblastic and the leukoblastic series, in renal sclerosis with anemia from old age, are those which correspond to hypoplasia of the bone marrow. In acute diffuse glomerulitis as well as in acute hemorrhagic glomerulitis with anemia the medullary alterations are of the type of those which are observable in acute and subacute forms of posthemorrhagic anemia. However, erythrocytes in the peripheral blood show morphologic alterations which are characteristic of nephritis. In diffuse chronic renal inflammation the hematopoietic functions (output of stem cells) are diminished. The leuko-erythropoietic ratio in the myelogram is disturbed with predominance of either myeloblasts or erythroblasts from uneven formation of the cells, the curves of maturation of the cells are increased, mitosis is diminished and the medullary threshold for passage of mature cells to the blood is increased. The myelopathy causes typical alterations to the peripheral blood with morphologic changes of the erythrocytes and diminution of their number. Its evolution parallels that of the renal disease and it progresses to aplasia of the bone marrow. Administration of a combined treatment of arsenicals, iron and liver extract, early in the development of the renal disease, controls the functional disorders of the bone marrow with consequent control of the morphologic changes of the blood cells. The medullary alterations of nephritic myelopathy are different from those which are seen in the various forms of myelopathy in secondary anemia of toxic or infectious origin. They are also different from those which develop in anemia from insufficient supply of minerals in the diet and from pernicious anemia. In the terminal stages of the renal disease as well as in true uremia the bone marrow is transformed into a gelatinous yellow material which does not contain any active red marrow.

Arch. Urug. de Med. Cir. y Especialid., Montevideo

14: 513-640 (June) 1939. Partial Index

*Neurolymphogranulomatous Syndromes. J. C. Plá, A. Pérez Sánchez and J. Pereira Granotich.—p. 513.
Modifications of Elbow and Madelung's Deformity. R. A. Piaggio Blanco and F. Garcia Capurro.—p. 532.
Surgical Treatment of Acute Infections of Fingers and Hands. E. Andreón.—p. 567.

Neurolymphogranulomatous Syndromes.—Plá and his collaborators say that malignant lymphogranulomatosis may cause various types of nervous syndromes from compression of the lateral columns of the spinal cord, the brain or the nerve roots by lymphogranulomatous lymph nodes or their metastases. Certain nervous syndromes may also be observed in absence of nervous compression. The authors report two cases. In the first case a syndrome of diffuse meningoradiculoneuritis developed in the course of the disease with paralysis of the sixth nerve, oculosympathetic paralysis (Horner's syndrome) and radicular sciatic pain. In the second case, also in the course of the disease, a form of progressive bilateral muscular atrophy of the extremities developed. In both cases the Wassermann reaction of the blood and cerebrospinal fluid was negative, there were no symptoms of tumors or tumoral compression at the brain or the spinal cord, and the cerebrospinal fluid, taken by spinal puncture, showed the presence of a meningeal reaction of irritation. In the second case paralysis and sensory disturbances did not exist and the iodized poppyseed oil did not stop after having been injected by the suboccipital and lumbar routes in the Trendelenburg position. The authors conclude that in both cases the nervous symptoms were caused by the lymphogranulomatous virus, which was located at the meninges and various nerve roots in the first case and at the lateral columns of the spinal cord in the second case. The development of nervous syndromes in malignant lymphogranuloma in the absence of nervous compression prove, according to the authors, the existence of lymphogranulomatous virus, although it has not yet been identified.

Klinische Wochenschrift, Berlin

18: 949-980 (July 15) 1939. Partial Index

Regulatory Processes in Organism in Oxygen Deficiency. G. Zaeper.—p. 949.
*Functional Tests of Liver in Treatment with Sulfanilamide Preparation. W. Schmidt.—p. 953.
Anaphylactic Shock During Various Degrees of Saturation with Vitamin C. F. Diehl.—p. 956.
Changes in Blood in Hemophilia. Else Heyl.—p. 960.
Does Human Placenta Contain Cholin Esterase?—p. 963.
Alcapton, Acetone and Carbohydrate Deficiency. C. Jimenez Díaz, H. Castro Mendoza and J. Sánchez Rodriguez.—p. 965.
Significance of Bile for Resorption and Elimination of Uliron (Sulfanilamide). W. Lutz.—p. 967.

Hepatic Function During Sulfanilamide Therapy.—According to Schmidt, the administration of chemotherapeutic substances taxes the intermediate metabolism and particularly the liver. He also raises the question as to which toxin is more likely to cause damage, that of the infection or that of the chemotherapeutic substance. In this connection he cites observers who described cases of gonotoxic icterus and then describes his own studies on the hepatic function of gonorrheal patients who underwent treatment with sulfanilamide. In twenty-nine cases he tested the hepatic function before, during and after the administration of sulfanilamide by means of the galactose tolerance test according to R. Bauer; simultaneously he observed the blood sugar curve and examined the urine for urobilinogen, tyrosine and leucine. He found that the functional examination of the liver of patients with gonorrhea often revealed pathologic values, before treatment with sulfanilamide was instituted, and that the administration of sulfanilamide nearly always exerted a favorable influence on the hepatic function. In cases in which the hepatic function was normal before the administration of sulfanilamide, no damage was observed after this medication. Moreover, gonotoxic icterus rapidly disappeared under the influence of sulfanilamide. A comparatively large dose of sulfanilamide (63 Gm.) caused no hepatic impairment in the author himself. In two cases of severe intoxication with a nitrosulfanilamide body, the test of the hepatic function disclosed no impairment of the hepatic parenchyma. Chemotherapy by means of sulfanilamide preparations never resulted in urobilinogenuria, nor were tyrosine and leucine ever detected in the urinary sediment during or after the sulfanilamide treatment. The author concludes that these results demonstrate the indifferent behavior of the examined sulfanilamide bodies toward the hepatic parenchyma.

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*Surgical Results in Congenital Muscular Torticollis. Koch.—p. 394.
Rare Form of Curvature of Forearm. E. Koptis.—p. 402.
Spontaneous Cure of Congenital Dislocation of Hip Joint. F. Drehmann.—p. 410.
Defective Form of Pelvis in Osteogenesis Imperfecta. E. Heidsieck.—p. 429.
*Surgical Treatment of Severe Static Flatfoot. A. Pavlik.—p. 439.
Roentgenogram of Foot. E. Güntz.—p. 445.
Normal Foot and Its Relation to Shoe. Margarete Schmidt-Schütt.—p. 476.

Surgical Treatment in Congenital Muscular Torticollis.—Koch considers in this report only cases of true congenital muscular torticollis, disregarding the cases of torticollis resulting from primary bone changes and also those mild cases of torticollis in which exercise and massage counteract the slight contraction of the sternocleidomastoid muscle. Regarding the

surgical technic employed at his clinic, he says that a cutaneous incision 2 cm. in length (usually longitudinal) is made above the lower end of the sternocleidomastoid muscle. Then follows exposure and division of the sternal and clavicular heads of the muscle and division of the surrounding fascia, also detachment of all shortened fascial strands. In a few cases from 1 to 1.5 cm. of the muscle is removed. Following arrest of hemorrhage and cutaneous suture, Schanz's absorbent cotton bandage is applied and the patient's head is fixed in a position which overcorrects the deformity. The bandage is renewed after eight and twenty-four days, and after an additional three weeks the last bandage is removed and then passive exercises and massage are begun, which are continued for from six to twelve months or longer. In order to obtain information about the efficacy of this method, the author made inquiries regarding 117 patients who received this treatment during the years between 1930 and 1937 inclusive. Information was obtainable from 108 of these patients. At the time of operation the patients varied in age between 4 months and 18 years. In 61 per cent of the patients the operation was performed during the first two years of life. Summarizing the results, the author says that in eighty-six cases the results were good, in twenty-one cases were unsatisfactory and in one case were bad. He emphasizes that the best results were obtained in those cases in which the operation was performed during the first two years of life.

Surgical Treatment of Severe Static Flatfoot.—Pavlík says that the severest forms of flatfoot, which are characterized by curvature of the leg, especially in the distal portion just above the ankle joint, and which present subluxation in the talonavicular joint, abduction of the anterior part of the foot, valgus position of the heel and contracture of the extensors, of the peroneal muscles and of the achilles tendon, require surgical treatment because conservative treatment fails to produce the desired results. The author describes three different types of surgical treatment which are designed to correct the various forms of flatfoot. He shows that it is necessary to select that type of surgical method which, on the one hand, reconstructs the arch of the foot and, on the other hand, counteracts the curvature of the lower part of the leg, which is the essential cause of the collapse of the arch of the foot and of the subluxation in the tarsal joints. If the curvature in the leg is removed, the crural skeleton becomes shorter and the muscular contracture, which together with the arthrosis deformans-like changes in the talonavicular joint causes the deformity of the foot, subsides. The author resects the talonavicular joint by removing the cartilage and the arthrosis deformans-like changes from the head of the talus. By osteotomy of the bones of the leg he overcomes the curvature and by suitable wedge-shaped osteotomy of the tibia causes the reposition of the subluxation in the talonavicular joint to become possible.

Acta Medica Scandinavica, Stockholm

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Clinical Investigation in Spring of 1938 of Cases of Sciatica Observed During Years 1933 and 1934. S. Ekvall.—p. 1.
Exogastric Fibroma with Gastrointestinal Hemorrhages. E. Filo and F. Šubík.—p. 34.
Studies on Ascorbic Acid by Means of the Photelgraph. T. Guthe and K. K. Nygaard.—p. 40.
Familial and Hereditary Hyposomia and Vitiligo: Importance of Pituitary Factor in Cutaneous Dyschromias. M. Cahane and T. Cahane.—p. 62.
*Resistance and Immunity in Tuberculosis. L. Ascher.—p. 71.
*Iodine Therapy in Hypertension and Arteriosclerosis. N. Alwall.—p. 83.

Resistance and Immunity in Tuberculosis. — Ascher directs attention to the age law of natural, internal resistance, which was formulated by him many years ago. According to this law the general, internal and natural resistance increases from infancy to school age, reaching its maximum between the ages of 5 and 15 years, and then it decreases with advancing age. The author cites statistical reports on tuberculosis from different countries. He points out that unfavorable nutrition increases the mortality from tuberculosis, whereas reduction in industrial activity reduces the mortality rate from tuberculosis. It has been demonstrated that in times of economic crisis, with unemployment, the mortality from tuberculosis decreased further than it did during times of prosperity and employment. Moreover, this decrease in mortality was limited to the employed age groups, whereas in children there was a slight increase in mortality. The author further gives his attention to immunity, and says that in some large cities 100 per cent of the adults give a positive Pirquet reaction. Approximately 0.5 per cent of these develop tuberculosis annually; that is, 0.5 per cent of the immune persons develop the disease, not 0.5 per cent of the infected ones. The author emphasizes that the activity of the tubercle bacillus is limited by the natural internal resistance of the human organism and by the immunity produced by the bacillus itself. However, resistance and immunity are subject to impairment and consequently are not always complete. Factors which play a part in this impairment are nutrition, exertion and exposure. After discussing these, the author says that the reduction of the tuberculosis mortality hitherto has been examined only from the point of view of medical and social measures. He shows that spontaneous, that is, endemically acquired, immunity is the main factor, at least in regions where and in times when no measures are taken against tuberculosis, and when its mortality has been known to decrease more than at times when measures were taken against it. The comparative freedom of children of school age from tuberculous manifestations in the presence of slight individual infection, but of approximately 50 per cent positive Pirquet reactions, indicates adequate immunity in the concurrence of highest resistance with small quantities of infectious agent. There is the possibility of improving the immunity by BCG. Since it is possible that the time may come when the population will not acquire an adequate immunity in the spontaneous manner, immunizatory measures, as in the case of smallpox, might have to be employed.

Iodine Therapy in Hypertension and Arteriosclerosis.—Alwall points out that iodine is widely recommended in the treatment of vascular diseases, particularly arteriosclerosis and hypertension. The generally accepted opinion is that iodine reduces the viscosity of the blood and consequently the resistance to the current, thus facilitating the circulation. This opinion was supported by earlier experiments, which demonstrated that the viscosity of the whole blood decreases under the influence of iodine therapy. More recent experiments demonstrated, however, that the viscosity of the plasma and not the viscosity of the whole blood determines the resistance to the blood current. For this reason the author reports his investigations on the question whether the viscosity of the plasma is influenced by iodine therapy. He examined the plasma of healthy persons and of persons with hypertension by means of Hess's viscosimeter. He made these tests before iodine therapy was instituted and after it had been continued for shorter or longer periods. The iodine therapy was found to produce no changes in the viscosity of the plasma and the author thinks that this contradicts the old theory that iodine therapy reduces the resistance to the blood current by lessening the viscosity and thus facilitating the circulation. He suggests that there must be another explanation for a possible favorable action of iodine therapy on arteriosclerosis and hypertension.

Ugeskrift for Læger, Copenhagen

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Witchcraft in Pregnancy and Delivery: Chapter from History of Popular Medicine. J. S. Møller.—p. 819.
Manifest Hemorrhage Due to Ulcer in Aarhus from 1918 to 1937. A. Guldager and F. Heintzelmann.—p. 826.
Method for Determination of Coagulation Time of Blood: Preliminary Report. M. Andreassen.—p. 831.
*Mortality of Lupus Vulgaris Patients and Cause of Death. C. N. S. Gundtoft.—p. 832.

Cause of Death in Lupus Vulgaris.—Gundtoft studied the cause of death in 211 cases of lupus vulgaris (sixty-five men, 145 women) treated at the Finsen Institute during the last twenty-five years. Only three patients, all advanced in age, died from lupus itself, sixty-one (twenty-one men, forty women) died from pulmonary tuberculosis, four men and three women died from tuberculous meningitis, nine men and seventeen women died from tuberculous diseases other than those mentioned and about half the patients died from causes not connected with tuberculosis. Lupus vulgaris is thus regarded as a benign disease but one which calls for careful examination as to the possible coexistence of tuberculous processes elsewhere.